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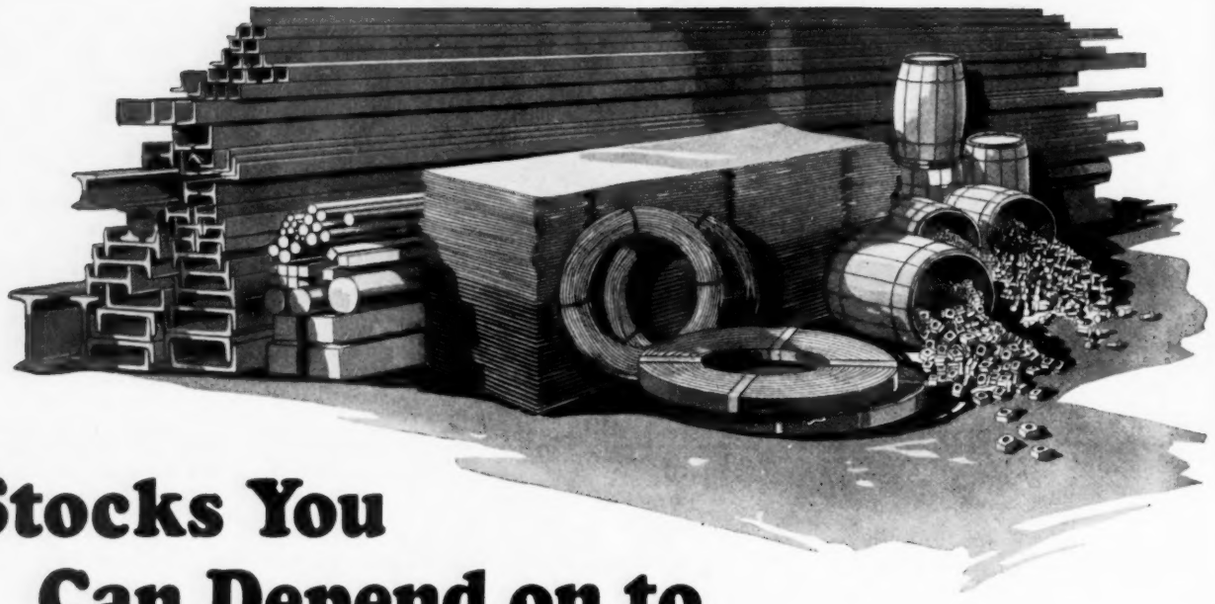

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STEEL-SERVICE

Volume 90 Number 18

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

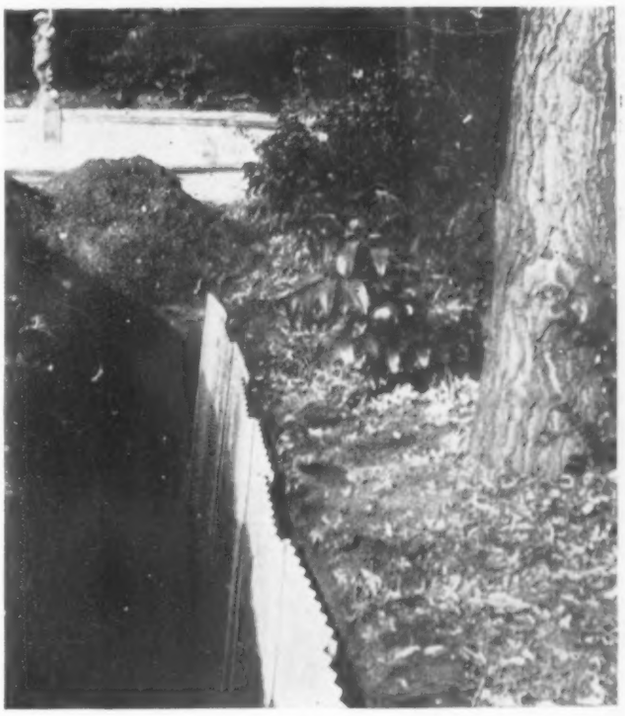
A LOCAL issue, was General Hancock's epitaph for the tariff, but that was 52 years ago. Harassed by imports, eastern warehouses a week ago (Apr. 25, p. 12) solicited congressional assistance in making the Atlantic a one-way lane—eastbound—for iron and steel. Now, with Britain hiking its duty on most steel products to 33 1/3 per cent and France setting quotas for American imports which the department of commerce appraises as "mere pittances," exporters are confronted (p. 17) with new bottlenecks. Even the United States Steel Corp. is joining a campaign before the tariff commission (p. 19) to increase the rate on cotton ties. When the rewritten tax bill is reported back to the senate a sanguinary battle over inclusion of punitive tariff levies (p. 19) in a revenue measure is assured. And as if to stress the international character of American industry, Secretary Lamont points (p. 18) to exports totaling $2,423,759,000 as leading the world in 1931, with 30 states doing an export business of $10,000,000 or more last year.

Exports Help, but Domestic User Is Standby

Exports of iron and steel in March expanded 23 per cent, chiefly to nonEuropean nations (p. 17), while imports of Dutch pig iron helped put March receipts up 50 per cent. But much as foreign trade is in the limelight, the standby of the steel industry is the domestic consumer. In the first quarter, imports totaled 98,822 tons and exports 131,079, contrasted with a domestic output of 2,899,002 tons of pig iron and 4,331,667 tons of steel ingots. . . . This market has developed enough new business, principally automotive, to put the steelmaking rate up to 24 per cent (p. 59), the highest in seven weeks. What is heartening is the fact that the tonnage-producing districts — Chicago, Pittsburgh, Youngstown—are holding their own or gaining. . . . Structurals continue to provide moderate support, awards last week totaling 15,335 tons (p. 56) and topping the weekly average for the year to date. . . . Detroit continues to feel better about the automotive situation (p. 24) and looks to the big three—Chevrolet, Ford, Plymouth—to lift automobile production in May to 150,000 units.

Mills Now Face Forward, Not Backward

Even the miasma of first quarter financial statements fails to shake the conviction of steel producers that they know the worst (p. 20). Failure of general steel requirements to sink lower is a favorable sign; some important pro-



—Courtesy Ingot Iron Shop News

These No. 14 gage sheets, with 2½-inch corrugations and a bead at the end for telescoping, restrain the roots of this tree on the estate of Paul D. Cravath, New York steel lawyer, from taking soil nourishment from nearby ground cover plants

—Courtesy Westinghouse Electric & Mfg. Co.

A million volts in action, proving the practicability of applying commercial surge tests to high voltage power transformers under operating conditions. Shown is a 1,000,000 volt surge thrown on a 138 KV, 1000 KV-a. transformer connected to 60-cycle power

ducers have expanded operations above their first quarter average. . . . Noteworthy encouragement is derived by the mills from the stable price situation in finished material (p. 51), although raw materials continue to ebb.

Convention Season Is Opened

First to the post in major conventions of 1932 is the American Welding society. Meeting in New York last week, it discussed tests to determine the punchability of weld metal and tentative drafts of a proposed specification which have been submitted to steel producers (p. 38). Although some mills are antagonistic to the inclusion of a requirement for the qualification of individual welders, an agreement appears imminent. . . . Foundry problems go to the shakeout in Detroit this week when the American Foundrymen's association stages its annual convention (p. 36).

Even Stack Absorbs Russian Spirit

From the torch to a daily production of more than 600 tons, in 16 days, is the record claimed for a new Russian blast furnace stack at Kuznetsk, built by American engineers (p. 36). A second stack of the same size—750 tons daily—is to be lighted later this year; two more are under construction. . . . More iron ore was imported from Russia in 1931 than was shipped by New York state mines, according to the Lake Superior Iron Ore association's annual analysis (p. 18) of the ore situation. As much as 40,000 tons was taken from Australia. Conneaut, Cleveland and South Chicago docks handled most of the Lake Superior shipments. . . . Glass from slag is a new by-product (p. 45) of the blast furnace developed by a laboratory.

Stainless Brightens Building Exteriors

Chrome-nickel steel of the 18-8 type strengthens its hold on the building industry by being specified as exterior trim for the Insurance Co. of North America building in New York (p. 38). Between 5 and 6 miles of strip up to 6 inches wide and some sheets will be used. . . . Experience in recovering 18-8 type scrap in coreless electric induction furnaces has led to adoption of a mixture of magnesia and alumina for a basic refractory (p. 36). One lining poured 76 heats of 8000 pounds each. . . . Stainless Production—Equipment and Method of Manufacture, will be one of six papers before the American Iron and Steel institute spring meeting (p. 19) in New York, May 19.

Automatic Controls Speed Production

By a combination of "selsyn" instruments and thyratron relays, an automatic preset screwdown control has been developed (p. 31). This permits presetting a program of as many as 11 roll settings on a control panel, following which, by the simple manipulation of a pass selector switch, edger and horizontal rolls are adjusted automatically and speedily to predetermined positions. . . . In a Pittsburgh district plant six thrustors (p. 45) are employed to operate the doors of a billet reheating furnace. . . . Substitution of chrome plastic for brick in the hearth of billet reheating furnaces (p. 45) has been found economical by one producer.

Shop Work Cuts Steel House Costs

An arc welded steel frame house being erected in northern Ohio features shop fabrication, with erection costs as low as $90 per ton (p. 35). Wall panels and bearing partitions averaging 14 to 18 feet wide, one story high and weighing 500 to 700 pounds, are transported to the site; the panels are erected and welded together; then floor joists are welded in position. . . . The garage of this house may be steel, as the steel requirements of the garage industry (p. 42), chiefly galvanized sheets, aggregate 19,000 tons annually.

New Barriers for Iron, Steel Exports; March Trade Rises

WASHINGTON—The lot of the exporter of iron and steel grows harder. Canada threw the first stone June 3, 1931, in levying duties giving preference within the British Empire; France over the past 60 days has been raising barriers in the form of quotas; now England as of April 26 puts a top addition on the tariff wall raised March 1.

During this period the tendency of exports of iron and steel from the United States has been downward, as the table in column 2 of this page discloses; thus far in 1932 the volume has been about one-half that of a year ago. In imports the decline is less pronounced, serving to contract the favorable balance of trade.

March developed a flurry—exports gaining 23 per cent over February and imports 50 per cent—but this was seasonal and the bulge was smaller than a year ago. March exports at 49,927 gross tons were the largest since December. Imports at 41,031 tons exceeded every month since April, 1931.

Small Part of Production

However, there is need for a proper perspective on the iron and steel foreign trade situation, which is being increasingly stressed as war debts and reparations become a more acute factor in the world depression. In the first quarter of 1932 American exports totaled 131,079 tons and imports 98,822 tons. In the same period, domestic production of pig iron was 2,899,002 tons and of open-hearth and bessemer steel ingots 4,331,667 tons.

Britain's 33 1/3 per cent duty on practically all semifinished and finished steel products, with 10 per cent on pig iron and 20 per cent on tubes, pipe and wire products, will virtually shut American products excepting specialties out of the British market, is the opinion of Luther Becker, chief, iron and steel division, department of commerce.

Since the 10 per cent duty was made effective March 1 few importations have been made by Britain from the United States, and tripling the duty will snuff out the remainder. In 1931 the British bought 40,476 gross tons of iron and steel in this market, and 44,878 tons in 1930. The 1931 value of finished steel products taken by Britain was $1,755,431 and of semifinished material, $1,630,711. For 1930 the comparative values are $2,068,731 and $2,045,162, according to Mr. Becker.

These new British duties are subject to revision within 90 days, or by July 25. It is not known in Washington that the state department will protest the rates inasmuch as there is no discrimination against the United States. The situation in regard to the French quota system is different, however, inasmuch as the participation of the United States in much of the French foreign trade is reduced to insignificant proportions.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	——1932——		——1931——	
	Imports	Exports	Imports	Exports
Jan.	31,053	40.660	41,628	92,719
Feb.	26,738	40,492	28,045	91,161
March	41,031	49,927	40,402	109,324
(3 mo.)	98,822	131,079	110,075	293,204
April	.....	.....	47,872	101,434
May	.....	.....	37,176	95,046
June	.....	.....	37,819	75,577
July	.....	.....	37,190	84,465
Aug.	.....	.....	30,139	73,338
Sept.	.....	.....	30,966	69,778
Oct.	.....	.....	29,401	59,335
Nov.	.....	.....	34,658	59,556
Dec.	.....	.....	25,812	57,263
Total	.....	.....	421,108	968,996

The most important items in the trade in iron and steel trade with France are automobile body sheets and strips, the allotment of the United States being 26 tons per month, which Mr. Becker characterizes as a "mere pittance."

In the American tariff law of 1931 is a provision that retaliation of about 50 per cent in duties is permissible in event of discrimination, but there is no knowledge here of any attempt to invoke this against France. More interest centers in the Hawley bill to adjust American tariff duties with depreciated foreign currencies.

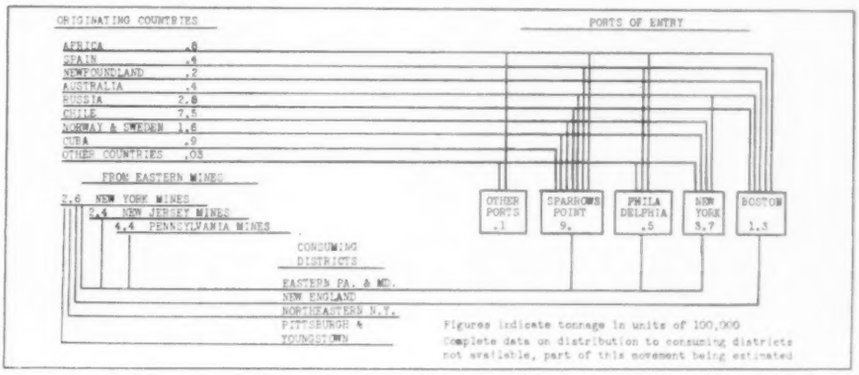
Cablegrams received by the iron and steel division from France show that the monthly quota until June 30 includes polished flat sheets of iron or steel bodies, a total quota of 200 metric tons of which an individual quota of 60 metric tons is fixed for imports from this country; flat iron or steel sheets containing more than 0.5 per cent of silicon a total quota of 58.3 metric tons of which an individual quota of 2.9 metric tons is fixed for imports from the United States.

Discrimination Apparent

For iron or steel rolled or forged in blooms, billets and bars, including bars of 3 millimeters or less in their thinnest parts, a quota of 19 metric tons for imports from all counties combined including the United States, except Belgium and Germany which are allowed 2956 metric tons together. For hoop iron or steel, hot rolled, a quota of 95 metric tons is allowed from Belgium, with 23 tons from all other countries including the United States.

Canada's effort to broaden home industry by means of the tariff has been successful, if the establishment of 155 new plants—145 of them American branches—in the past two years is a criterion. But the preference granted to England may be a boomerang.

At the recent annual meeting of the Steel Co. of Canada, Hamilton, Ont., Ross McMaster, president, pointed out that increased opportunities for English trade in Canad had been the sequel to cheaper sterling and that only the application of the antidumping measure which sets a value for sterling for tax assessment purposes has pre-



IRON ORE TRANSPORTED 10,000 MILES TO UNITED STATES: Though this country is the largest ore producer, 40,000 tons was brought from Australia in 1931, as shown by the Lake Superior Iron Ore association's chart. From Russia, 6000 miles distant, came 280,000 tons, an amount larger than produced by mines in New York or New Jersey

vented the situation from becoming a menace to Canadian industries.

Analyzing the March foreign trade of the United States, the iron and steel division of the department of commerce gives credit for the expansion in exports to demand from practically all parts of the globe except Europe, while the gain in imports is ascribed to shipments of pig iron from the Netherlands.

In 29 out of 48 export classifications, March bettered February. Despite the tariff, Canada in March took 2865 tons of black sheets, 2319

ORIGIN OF MARCH IMPORTS
Gross Tons

	Iron ore	Pig iron	Manganese	Ferromanganese
Brit. India	....	5,651	....	....
Canada	180	110	....	750
Chile	21,652	....	....	....
Italy	....	....	....	39
France	....	....	....	396
Japan	....	50	....	....
Kwantung	....	100	....	....
Netherlands	....	12,718	....	....
Norway	15,538	....	....	217
Spain	49	....	....	....
Soviet Russia	8,100	....	2,053	....
United King.	25	200	....	155
Total	45,544	18,829	2,053	1,557

tons of skelp, 1705 tons of shapes, 1636 tons of scrap and 1325 tons of hoops. Japan in March imported 11,203 tons of scrap. Belgium, normally the best foreign seller to the United States, was forced into second place by the Netherlands and the 12,718 tons of iron it shipped in.

United States in 1931 led the world in exports, the total being $2,377,981,786, and reaching $2,423,759,000 if re-exports be included, states Secretary of Commerce Lamont. Second was Germany with $2,192,850,000 including reparations in kind; third was Great Britain with $2,069,823,000 including re-exports.

Thirty states did an export business of $10,000,000 or more in 1931, with 12 exceeding $60,000,000 each.

Russian Iron Ore Imports Increase

MORE iron ore was imported into the United States from Russia in 1931 than was shipped from mines in New York state—280,000 tons, compared with 260,000 tons. During the World war the New York mines shipped a million tons a year, and the yearly average in the five years preceding 1931 was approximately 800,000 tons.

The Russian soviet has been increasing its exports to the United States, as a certain means of obtaining what it needs most—gold. The Russian ore is hauled 6000 miles.

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	March, 1932	Feb., 1932	March, 1931
Pig iron	18,829	5,734	7,357
Sponge iron	51	....	....
Ferromanganese, spiegeleisen (1)	1,557	2,678	3,022
Ferrochrome (2)	....	....	21
Ferrosilicon (3)	....	12	65
Other ferroalloys	....	100	125
Scrap	507	558	1,348
Ingots, blooms	368	16	2,300
Concrete bars	3,189	2,185	3,944
Hollow bar, drill steel	98	31	187
Merch. steel bars	3,529	3,195	5,133
Iron bars	41	99	73
Wire rods	973	843	455
Boiler, other plate	5	....	480
Sheets, skelp	1,566	2,735	2,362
Tin plate	2,529	26	12
Structural shapes	2,538	2,919	6,938
Sheet piling	....	....	....
Rails, fastenings	72	221	113
Cast iron pipe, fittings	....	....	588
Welded pipe	478	288	1,076
Other pipe	265	368	866
Barbed wire	1,551	1,400	502
Round wire	211	232	195
Flat wire, strip	59	68	65
Wire rope, strand	146	129	247
Other wire	23	73	96
Hoops and bands	1,454	1,896	1,841
Nails, tacks, staples	930	797	676
Bolts, nuts, rivets	7	19	167
Castings, forgings	50	102	137
Total	41,031	26,738	40,402

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

Ore from New York mines not consumed at local furnaces is shipped 500 miles at the most—some of it going to Youngstown, O., and Pittsburgh.

Three reasons exist for the relatively heavy imports from Russia. First, high quality; second, low price; and third, the ore can be brought in as a "back haul" in ves-

EXPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

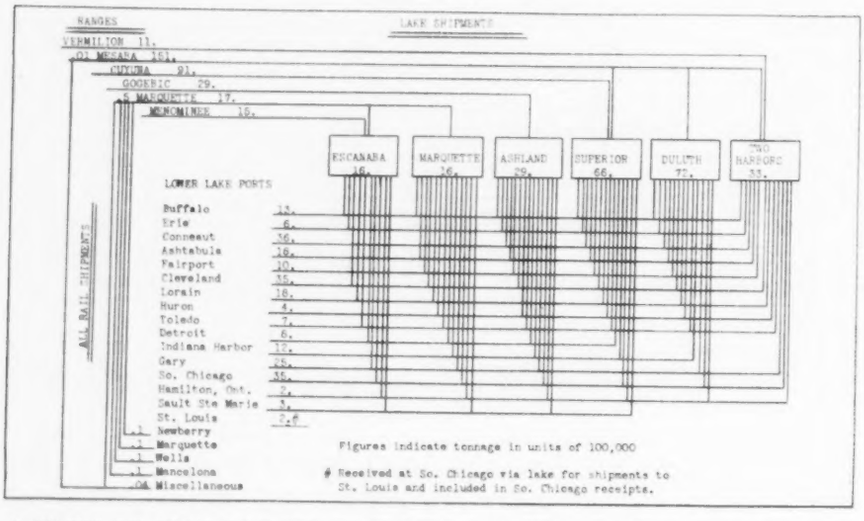
Item	March, 1932	Feb., 1932	March, 1931
Pig iron	175	377	324
Ferromanganese, spiegeleisen	....	....	....
Scrap	13,256	8,883	16,946
Ingots, blooms	186	23	462
Iron bars	68	13	84
Steel bars	1,364	1,631	5,823
Alloy steel bars	327	225	453
Wire rods	2,733	2,468	3,644
Boiler, other plate	1,237	792	6,243
Skelp	2,319	2,447	7,318
Iron sheets, galv.	182	85	1,002
Steel sheets, galv.	2,513	2,515	4,805
Steel sheets, black	3,135	2,401	7,973
Iron sheets, black	242	324	431
Hoops, bands, strip	2,127	2,340	3,778
Tin, terneplate	2,336	2,376	8,502
Shapes, not fabr.	2,000	1,381	11,440
Shapes, plates fabr.	920	1,053	3,573
Metal lath	174	148	247
Frames, sashes, sheet piling	319	56	266
Rails	822	1,893	3,516
Rail fastenings	730	531	1,099
Boiler tubes	243	260	763
Casing, pipe, seamless and welded	2,105	400	1,581
Seamless black pipe, other than casing (1)	67	20	..
Malleable screwed pipe fittings	155	132	489
Cast screwed pipe fittings	73	60	208
Cast pressure pipe, fittings	51	92	825
Cast soil pipe, fittings	251	271	1,240
Welded black, galv. steel pipe	2,054	2,213	3,469
Welded black, galv. iron pipe	305	180	431
Plain black or galv. wire	1,397	1,045	1,101
Barbed wire, fencing	2,562	1,189	2,456
Woven screen cloth	56	44	86
Wire rope	145	191	272
Other wire	204	223	455
Wire nails	615	476	670
Tacks	36	36	29
Other nails	412	223	324
Bolts, nuts, rivets, and washers	266	263	519
Iron castings	106	176	489
Steel castings	138	126	450
Car wheels, axles	385	336	906
Forgings	541	349	885
Total	49,927	40,492	109,324

(1) Not shown prior to 1932.

sels that otherwise would have to return to this country empty. Russian imports in 1931 were heavier than those from any other European country, though the poor demand for ore in Europe caused some of the Spanish and African ore to be offered at prices as low or lower than those for the Russian. These European ores ranged from 8½ to 9½ cents, at Atlantic coast points. Most of the Russian ore was delivered at Sparrows Point, Md., and Boston.

Long ocean hauls no longer are a barrier to iron ore imports. From Chile, 5000 miles away, came the largest imports, 750,000 tons. The longest haul was 10,000 miles, 40,000 tons being imported as "back hauls" from Australia.

The imports and their destinations, and shipments from eastern mines are shown in a chart on page 17. Distribution of iron ore from Lake Superior ranges to upper lake



A FLOW OF IRON ORE THAT IMPORTS CANNOT STEM: Sources and destinations of the Lake Superior product in 1931

ports, thence to lower lake ports and districts also is shown in an accompanying chart; these charts having been compiled by the Lake Superior Iron Ore association, Cleveland.

Program Announced for Institute Meeting

New York—American Iron and Steel institute has announced the program for its spring meeting, to be held at Commodore hotel, Thursday, May 19. Papers to be presented are as follows:

"Mining Taxation in the Lake Superior District," by Clarence B. Randall, vice president, Inland Steel Co., Chicago.

"A Modern Conception of Steel Quality," by H. W. Graham, chief metallurgist, Jones & Laughlin Steel Corp., Pittsburgh.

"The Economic Value of the Steel Industry to the United States," by George H. Charls, president, National Association of Flat Rolled Steel Manufacturers, Cleveland.

"Nondestructive Testing Methods in the Iron and Steel Industry," by Dr. Robert F. Mehl, assistant director of research laboratories, American Rolling Mill Co., Middletown, O.

"Stainless Steel Production—Equipment and Method of Manufacture," by E. C. Smith, assistant district manager, Central Alloy division, Republic Steel Corp., Massillon, O.

"Flexibility in the Use of Blast Furnace and Coke Oven Gas in the Steel Plant," by C. A. Meissner, manager, coke works, and Julius Strassburger, assistant chief engineer, Weirton Steel Co., Weirton, W. Va.

Gears & Forgings Continues

Gears & Forgings Inc., Cleveland, is operating as usual, although in the hands of receivers. The receivership is a friendly proceeding and the receivers are operating the company's business under the direction of the court that the company may be continued.

Call Sheet Metal Meeting

Philadelphia — National Association of Sheet Metal Distributors holds its 21st annual convention at the Bellevue-Stratford hotel, May 11-12.

Warehouse Men To Meet

New York—American Steel Warehouse association will hold its 23rd annual convention at the Commodore hotel here, May 17-18.

Universal's Operations Up

Universal Atlas Cement Co., Buffington, Ind., subsidiary of the United States Steel Corp., is increasing its operations.

The Business Week In Washington

APPLICATIONS have been filed with the United States tariff commission, asking an increased tariff duty on cotton ties, by Carnegie Steel Co., Pittsburgh Steel Co., Atlantic Steel Co., Connors Steel Co., and Tennessee Coal, Iron & Railroad Co. The investigation is asked under section 336 of the tariff act of 1930. Action has not yet been taken by the commission.

□ □ □

Customs bureau has held that so-called residium manganiferous waste from process of producing ferromanganese from manganese ore is free of duty under paragraph 1664 of the tariff act.

□ □ □

Foes of the program of including tariff on excise taxes in the tax bill won last week in the senate finance committee when duties on oil, coal and copper were eliminated. This was a reversal of the previous stand of the committee, ascribed to failure also to put a tariff on lumber. On the floor of the senate this contest over duties is expected to break out anew.

When the tax bill is reported back to the senate by the finance committee, possibly this week, it will contain normal income taxes double the present rates and the highest since the war; the corporation tax, now 12 per cent and raised to 13½ by the house, will be 14 per cent; checks of more than $5 will be taxed 2 cents.

Breaks River Record

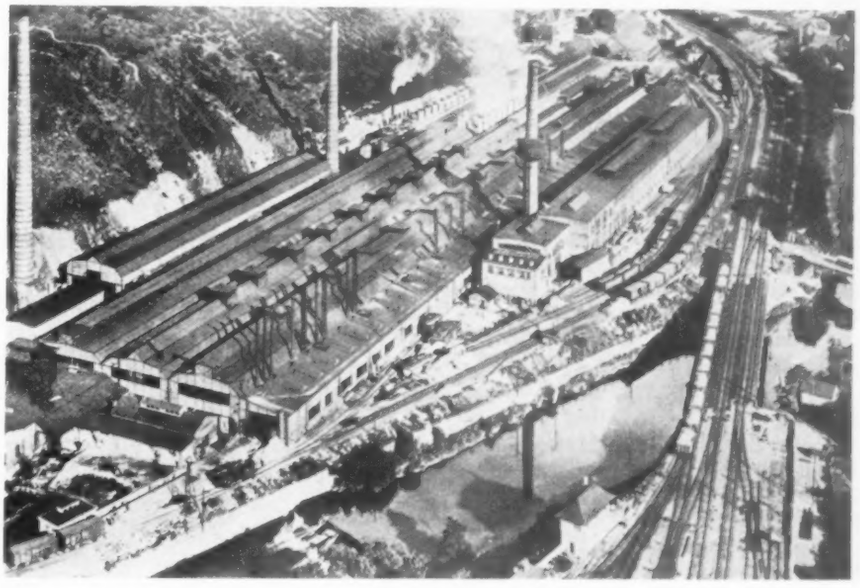
From Pittsburgh to New Orleans, 1939 miles, in 10 days 20 hours with a tow of steel is the new record made recently by the steamer A. O. ACKARD of the Carnegie Steel Co. fleet. This was 19 hours under the previous record of the MONONGAHELA of the same fleet. Leaving Pittsburgh with 5321 tons of steel and barges of fuel, cargo was left at Cincinnati, Louisville, Ky., and Memphis, Tenn., the final cargo into New Orleans being 1550 tons.

Marks 50th Anniversary

A special edition of *The Blast*, the weekly newspaper of the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., issued for April 15 commemorated the 50th anniversary of the rolling of the first rail by the company, then the Colorado Coal & Iron Co., at its Minnequa mill, Pueblo, April 12, 1882. Type and illustrations used depicted the style of 50 years ago. Robert Leech is editor.

Calls Business Meeting

New York—Annual business meeting of the American Iron and Steel institute will be held here May 2. The general spring meeting is scheduled for Thursday, May 19.



WISSEN PLANT OF VEREINIGTE STAHLWERKE A. G.: This largest tin plate mill in Germany has purchased from the Surface Combustion Co., Toledo, O., a walking beam pack furnace, first to be installed in Europe. The furnace, a normalizer, will be fired with coke oven gas and is of the continuous type. The contract was closed recently when George R. McDermott, vice president, Surface Combustion Co., was making a visit of several weeks with foreign companies operating as licensees of the company

Quarterly Reports Breathe Hope Steel Scrapes Bottom

SEVERE as first quarter losses of practically all steel producers are, their reports are accompanied by cautious optimism—a new note in this depression. Eugene G. Grace, president of Bethlehem, is encouraged because the decline in demand appears to have been checked and steel prices are more stable. E. T. Weir, chairman of National, reports that buying has increased since the first quarter ended, with a proportionate increase in production. H. G. Dalton, chairman of Sheet & Tube, finds his company's operations now at 21 per cent, compared with an average of 16.8 per cent of the first quarter. E. F. Clark, president of Newton, forecasts improvement in automotive requirements for steel.

U. S. Steel Omits Common Dividend

IN PASSING its dividend on the common stock, the United States Steel Corp. did more than sever a practice of 17 years, in that it conserved $4,351,697 of cash which maintenance of the $2 annual rate would have required. Figured on the return steel common was paying a year ago, that is 7 per cent, the saving may said to be one of $15,223,378.

Of further long-term benefit to the common stockholder is the regular charge-off of depletion, depreciation and obsolescence. This figure in the first quarter was made to the extent of $10,740,321.

How unsatisfactory was the first quarter is evidenced by the operating loss of $1,136,607, which is net after deducting all expenses incident to operating, including repairs.

This, in addition to the aforementioned depreciation charge, left a deficit of $11,876,928. Interest charges aggregated $1,341,621 and preferred stock at the regular rate amounted to a charge of $6,304,919, so that the quarter's net charge to surplus was a deficit of $19,523,468.

By comparison, fourth quarter of 1931 showed an operating profit of $3,970,920. This, less all depreciation, bond, preferred and common stock deduction, resulted in a net loss of $15,033,414.

In the first quarter of 1931, operations netted $19,464,836 and more than covered depreciation charges. However, after all deductions and dividends a net deficit of $14,763,240 was reported.

In this quarter a common dividend disbursement of $1.75 was made, which amounted to $15,223,378 on the 8,699,073 shares then outstanding.

During the past year unfilled tonnage of the Steel corporation has declined from 3,995,330 tons on March 31, 1931 to 2,472,413 tons as of March 31, 1932.

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Inland Passes Dividend

Inland Steel Co., Chicago, and subsidiaries, report net loss of $820,541 for the first quarter after interest, tax and depreciation charges. In the first quarter of 1931 net profit of $633,873 was reported. The former dividend of 25 cents per quarter on the capital stock has been omitted.

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Republic Showing Better

Republic Steel Corp., Youngstown, O., in reporting a loss of $2,476,293 for the first quarter, made a better showing than in the third quarter of 1931. However, the report showed a loss exceeding that of the fourth quarter, 1931.

In the first quarter of 1932 net profit from operations was $350,978, which less bond interest of $873,809, depreciation of $1,878,462, and $75,000 in guaranteed dividends of the Trumbull-Cliffs Furnace Co., left net loss of $2,476,293. This compares with net loss of $1,692,593 for the first quarter of 1931.

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National Nets 27 Cents

National Steel Corp., Pittsburgh, reports first quarter net profit of $592,799 after charges, equal to 27 cents a share on the capital stock. This compares with net profit of $1,926,000, or 89 cents a share, in the first quarter of 1931. Income account for the 1932 quarter shows operating profit of $2,024,655 less depreciation of $785,560 and interest of $536,945. Federal taxes were $109,351, thus leaving a net profit of $592,799.

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Sheet & Tube Loss Large

Youngstown Sheet & Tube Co., Youngstown, O., reports a net loss of $3,057,736 after all charges but preferred dividends of $206,250 for the first quarter. This compares with a net loss of $822,909 in the first 1931 quarter. The company showed a loss from operations during the first quarter of $441,773. Depreciation to the amount of $1,556,830 and $1,059,132 in interest were charged off, leaving the aforementioned loss before preferred dividends or $3,263,986 net loss.

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J & L Cuts Preferred Rate

Jones & Laughlin Steel Corp., Pittsburgh, and subsidiary companies, report for first quarter net loss of $2,399,089 after interest, de-

Steel Corporation's Quarterly Report Summarized

	First Quarter 1932	Fourth Quarter 1931	First Quarter 1931
Total earnings	†$1,136,607	$3,970,920	$19,464,836
Less depreciation, depletion, etc.	†10,740,321	11,988,190	11,325,302
Net income	†11,876,928	†8,017,270	8,139,534
Less Bond interest	1,341,621	1,357,489	1,374,477
Balance	†13,218,549	†9,374,759	6,765,057
Add special income	.....	4,997,961	.....
Total	†13,218,549	†4,376,798	6,765,057
Dividends:			
Preferred	6,304,919	6,304,919	6,304,919
Common	.....	4,351,697	15,223,378
Surplus	†19,523,468	†15,033,414	†14,763,240

†Deficit.

preciation, depletion and taxes. This compares with loss of $1,545,948 in the fourth quarter and loss of $190,-982 in the corresponding period of last year.

The deficit resulting from operations, including taxes, was $1,117,-003, compared with a profit of $1,-181,392 a year ago. Total first quarter deficit, including preferred dividends, was $3,426,582 compared with $1,794,795 in the first quarter of 1931. The latter figure included common dividends, now omitted, of $576,320.

A dividend of 1 per cent payable July 1 to stock of record June 13 was declared on the preferred stock. This stock ordinarily is on a 7 per cent annual basis and dividends are cumulative.

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Wheeling Loses $823,137

Wheeling Steel Corp., Wheeling, W. Va., and subsidiary companies, report for the first quarter net loss of $823,137, against a loss of $628,-623 in the corresponding 1931 period. A profit of $462,251 was shown before depreciation, depletion and bond interest, compared with a profit of $644,242 before these charges a year ago. Total surplus as of March 31, 1932, was $8,115,336 against $13,583,264 a year ago.

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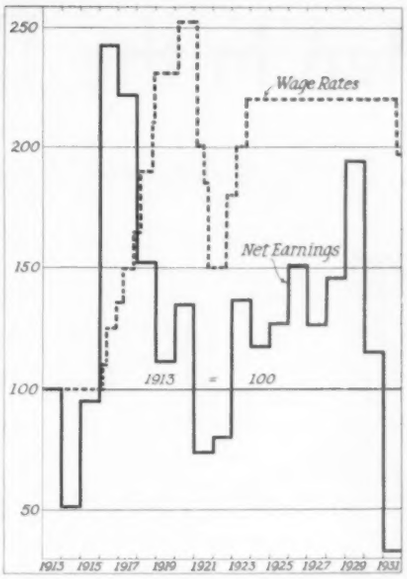
Clark Foresees Gains

Youngstown, O. — Better steel business is in sight because automobile production is improving, E. F. Clark, president, Newton Steel Co., told stockholders, April 28. Newton's first quarter statement, while showing a loss, will be better than for the fourth quarter of 1931.

Mr. Clark was re-elected president and treasurer. C. H. Butts, vice president in charge of operations, was elected a director to succeed J. H. Fitch, resigned.

Mr. Fitch, who resigned recently, has not designated his plans for the future.



Trend of United States Steel Corp.'s net earnings and common labor 10-hour wage rates. Rates are 98 points above 1913; net earnings are 66 points below

Grace Encouraged As Decline Halts

WHILE demand for steel has not improved, for six or seven weeks the volume has been stationary and this coupled with stable prices is the first encouraging sign in months, Eugene G. Grace, president, declared at the meeting of the Bethlehem Steel Corp., April 28.

A further reduction in steel mill wages has been discussed, Mr. Grace said, but no definite action has been taken. Whatever savings accrue from a possible wage reduction ought not be demanded by consumers in the shape of lower prices, according to Mr. Grace.

The serious foreign steel import situation on the eastern seaboard is gradually working into the interior. Foreign steel is being placed on the eastern seaboard, he said, even below European cost of production, making it advisable for Washington to consider protection from dumping.

Especially in shapes, bars and lighter finished products is foreign competition sharp. Some departments in Bethlehem and other mills have been forced to close because of foreign competition, Mr. Grace declared. Belgium, Germany, France, Sweden and Great Britain, in order, are the chief exporters to the United States. Some Belgian bars have been offered at ½ cent a pound.

Mr. Grace highly praised President Hoover's address at the governors' conference at Richmond, Va., last week on the point that budgets should not only be balanced by taxation but also by reducing expenditures.

Bethlehem Steel Corp.'s quarter loss was $5,330,769, which includes the disbursement of $1,645,000 in regular preferred dividends. From operations, Bethlehem and subsidiary companies reported total income of $1,431,657. When interest charges of $1,794,039 were deducted, a deficit of $363,382 was reported.

Depreciation of $3,324,387 augmented this loss to $3,685,769, and plus the cash payment of preferred dividends, the net loss of $5,330,-769, was incurred.

By comparison, fourth quarter of 1931 grossed an operating income of $3,485,700. Less interest, depreciation charges and preferred dividends, the net loss in that period was $3,-421,938. In the first 1931 quarter, gross income was $7,551,977, and after all charges $191,942 was netted for the common stock after preferred dividends.

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Superior Loss Is Steady

Superior Steel Corp., Pittsburgh, reports for first quarter net loss of $150,654 after all charges, compared with loss of $144,428 in the corresponding period of last year. Current assets as of March 31, including $378,088 cash and $201,325 government securities, totaled $1,625,-880, compared with current liabilities of $124,683.

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Colorado Fuel & Iron Co. reports deficit of $399,278 for the first quarter of 1932 after interest, depreciation charges, but before deduction of equipment dismantled, nor federal income tax. This compares with deficit of $247,215 for the first 1931 quarter after similar charges were made.

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Follansbee Bros. Co., Pittsburgh, has omitted preferred and common dividends usually acted upon at this time.

Bethlehem's Financial Statements Compared

	First Quarter 1932	Fourth Quarter 1931	First Quarter 1931
Total income	$1,431,657	$3,485,700	$7,551,977
Interest charges	1,794,039	1,842,365	1,842,454
Balance	†362,382	1,643,335	5,709,523
Less depreciation	3,323,387	3,420,273	3,767,581
Net income	†3,685,769	†1,776,938	1,941,942
Preferred dividend	1,645,000	1,645,000	1,750,000
Common dividend	.....	.....	3,200,000
Total	1,645,000	1,645,000	4,950,000
Deficit for period	5,330,769	3,421,938	3,008,058

†Deficit.

Industrial Men in the Day's News

Prof. Frank P. McKibben, President, American Welding Society, New York

HIS work has been notable in the development of structural fusion welding.

IN the past five years he has addressed over 100 audiences and written 71 articles, all on welding.

THE Fritz Testing Laboratory, Bethlehem, Pa., is a product of his design, where for ten years he has been in charge.

FURTHER honors were bestowed on Prof. Frank P. McKibben in New York last week when he was elected president of the American Welding society and was named recipient of the 1931 Samuel Wylie Miller medal, the latter for his outstanding work in the development of structural fusion welding.

Born at Fort Smith, Ark., Nov. 13, 1871, and graduated from Massachusetts Institute of Technology, Cambridge, Mass., in 1894, Professor McKibben has devoted his career to engineering instruction, writing and consulting work.

From 1894 to 1907 he was instructor and professor at Massachusetts Institute of Technology; from 1907 to 1919, professor at Lehigh university, Bethlehem, Pa.; and from 1919 to 1929, professor at Union college, Schenectady, N. Y. In 1926 he became affiliated with the General Electric Co., Schenectady, as consulting engineer, a capacity in which he now serves. However, during all these years he has and continues to conduct a general engineering practice.

Indicative of his great interest in the subject of structural steel welding, Professor McKibben since 1927 has addressed more than 100 audiences and has written 71 articles, all pertaining to welding. Since that time he has been identified with the welding operations on more than 12 large structural projects.

In 1922, with Ernest Humphrys, he made the first tests that were made on fillet welds in longitudinal shear.

Professor McKibben at one time was designing engineer for the Boston Elevated Railway Co., Boston; was consulting engineer for the Pennsylvania Water Supply commission; was assistant bridge engineer, Massachuetts Railroad commission, and as such made calculations for and examined 1500 railroad bridges and 800 highway bridges during six years. He designed, equipped, and for ten years had charge of the operation of the Fritz Testing laboratory, Bethlehem, Pa., testing steel, concrete and other materials. He has designed many bridges, both steel and concrete.

Professor McKibben was author of "Steel Bridge Construction" in the American Civil Engineers' handbook; "Concrete Arch Bridges" in concrete—plain and reinforced. In addition, to those pertaining to welding, he has been the author of 160 technical articles in scientific and technical journals and in the publications of engineering societies.

He has long been active in the American Welding society, of which he was formerly a vice president. In addition to the board of directors and executive committee, he has been a member of the committees on structural steel welding, structural steel welding steering, building codes and pipe welding.

He resides at Black Gap, Pa., and has for his hobbies fruit orchards and the collection of oriental rugs.

CARL V. DODGE, manager of roll and steel casting sales for the United Engineering & Foundry Co., Pittsburgh, has been elected a vice president of the company. He has been identified with the production and sale of rolls and steel castings since 1904, when he entered the employ of the United company at its Vandergrift, Pa., plant. Mr. Dodge was made assistant manager of sales of this department in 1921, and a year ago was named manager. He has done considerable development work in connection with cast-steel annealing boxes widely used in the steel industry.

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William J. Sullivan, associated with the president's office, United States Steel Corp., now can be reached at postoffice box No. 211, Trinity station, New York.

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Frank F. Brooks, president, First National bank, Pittsburgh, has been elected a director of the United Engineering & Foundry Co., Pittsburgh.

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T. A. Reynolds, McConway & Torley Co., Pittsburgh, has been nominated for the presidency of the Pitts-

burgh Foundrymen's association for the year 1932-33.

G. H. Zoerb, Sharpsburg Foundry Co., Sharpsburg, Pa., has been nominated vice president.

Nominees for the executive committee of the association are: F. C. T. Daniels, Mackintosh-Hemphill Co., Pittsburgh; C. E. Davis, Homestead Valve Mfg. Co., Coraopolis Pa.; S. B. Cuthbert, Carnegie Steel Co., Braddock, Pa.; and H. P. Spilker, Sterrit-Thomas Foundry Co., Pittsburgh.

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Myron C. Taylor, chairman, United States Steel Corp., has sailed for Europe to consider export problems of the corporation.

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J. Frederic Byers, vice president of A. M. Byers Co., Pittsburgh, has been elected chairman of the board, succeeding the late E. M. Byers.

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James A. Farrell, former president, United States Steel Corp., will broadcast over the Columbia network May 4 from the National Foreign Trade council convention at Honolulu, T. H.

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C. E. Allen, commercial vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected a vice president of the American Management association for the term 1932-33.

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J. P. Shaw, purchasing agent, Patterson Steel Co., Tulsa, Okla., has been elected a vice president of the Tulsa Association of Purchasing Agents, affiliated with the National Association of Purchasing Agents.

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J. H. Fitch Jr., associated since 1918 with the Newton Steel Co., Detroit, resigned effective April 30. At the time of his resignation he was vice president, treasurer and a director of the company.

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L. A. Babb has been appointed assistant to the manager, Bridgeport Machine Co., Wichita, Kans., according to announcement by A. A. Buschow, president. He was formerly in the sales department.

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Dr. Ambrose Swasey, noted as a maker of precision instruments and chairman of the board of Warner & Swasey Co., Cleveland, will be presented with the Franklin medal of the Franklin institute, at Philadelphia May 18.

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Charles S. Belsterling has been appointed vice president in charge of traffic for the United States Steel Corp. Since 1914 he has been general commerce attorney for the Corporation.

R. E. Zimmerman has been named assistant to the president of the United States Steel Corp. For many years he has been with the American Sheet & Tin Plate Co., occupying latterly the position of assistant to the vice president and director of the research laboratory.

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W. R. Mau, Vanadium Alloys Steel Co., has been elected president of the American Machinery and Tools institute, Chicago.

A. H. Brown, International Harvester Co., Chicago, has been elected vice president for the ensuing year.

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Owen D. Young, chairman of the board, and Gerald D. Swope, president, General Electric Co., Schenectady, N. Y., were re-elected to their respective positions at the recent directors' meeting. This is the eleventh year in which they have served in these positions.

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Barney Rubine, Hudson Iron & Metal Co., Bayonne, N. J., has been elected president of the New Jersey chapter of the Institute of Scrap Iron and Steel Inc., New York, succeeding J. J. Brady. Frank Contey Jr., of Frank Contey Inc., Jersey City, N. J., was elected chairman of the executive committee.

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James S. Watson, formerly vice president in charge of Link-Belt Co.'s Dodge works, Indianapolis, has been appointed vice president and general manager of both the Dodge and the Ewart works, the company's two Indianapolis chain plants, thus succeeding George P. Torrence, who was recently named president.

Frank S. O'Neil, heretofore manager of the company's Ewart works, has been appointed assistant general manager of both Indianapolis plants.

C. Walter Spalding, who has been connected with the Ewart works for a number of years, has been appointed sales manager of Ewart plant products.

Harvester Sponsors Gardens

Chicago—International Harvester Co. has announced a program by which 4500 laid-off employes in Chicago will be given plots to cultivate as gardens. Tractors have begun to prepare 1000 tillable acres leased by the company, each employe to have one-quater acre. Cultivating tools and seeds will be furnished by the company. The company may adopt similar programs at its plants in Ft. Wayne, Ind., Milwaukee, Canton, Ill., and Auburn, N. Y.

Robinson Retires in June

T. W. Robinson, vice president of the Illinois Steel Co., Chicago, will retire early in June under the compulsory 70-year retirement plan of the United States Steel Corp. Mr. Robinson will be 70 on June 7.

Obituaries

HARRY G. BLACK, 43, vice president of Black Hardware Co. and the Texas Nail & Wire Mfg. Co., Galveston, Tex., was killed in an airplane crash at Lufkin, Tex., April 19. A prominent business man of Galveston, he had been identified with the Black company since 1910.

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Louis Mertens, 77, founder of the Keystone Brass Co., Erie, Pa., died at Erie April 22.

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H. W. Gunnoe, 45, district manager at Pittsburgh of the E. F. Hauserman Co., Cleveland, died at Pittsburgh, April 27.

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Albert W. Smith, 79, president of the Cary Safe Sales Co., Buffalo, for the past 15 years, died April 23 at Buffalo. He was also president of the Lisbon Cement Co., Lisbon, O.

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Peter Boyd, 83, retired official of the National Tube Co., Pittsburgh, died April 22 at his home, Beaver, Pa. Mr. Boyd formerly was general superintendent of the Pennsylvania works, National Tube Co., and participated in the construction of that plant.

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Joseph A. Kelly, 75, recently president, Reliance Steel Casting Co., Pittsburgh, died April 25. Mr. Kelly was the founder of the Reliance company, previously having been identified with the American Steel Foundries at Pittsburgh. He also was vice president of the Vulcan Crucible Steel Co., Aliquippa, Pa.

Continental Receiver Near

Cleveland—George L. Gugle, Columbus, O., was named receiver for Continental Shares, Inc., in the circuit court at Baltimore, April 25; then on April 26 the appointment was rescinded and final decision on a receiver deferred until May 9.

Continental Shares is the investment trust formed by Cyrus S. Eaton, Cleveland, and has been an important holder of steel stocks.

Less Coke Is Stocked

By-product coke production in March averaged 67,400 net tons daily, against 68,820 tons in February, states the federal bureau of mines. February output of beehive coke was 3237 tons daily in March, 3432 tons in February. Stocks of by-product coke at producers' plants April 1 were 3,473,000 tons, on March 1 they were 3,839,000 tons.

MIRRORS of MOTORDOM

DETROIT

WITH due regard for the fact that the purchasing power of the country has diminished, both on account of further reductions in personnel by many employers and to failure of considerable seasonal work to open up, sentiment in the low-price division of the automobile industry has improved.

Chevrolet and Plymouth, in the order named, continue to be moderately good customers of the steel industry. Ford still is third, with greater potentialities than either of its rivals. For practically all steel products not rolled at the Rouge steelworks, small orders are filtering through the industry.

Having covered for substantially all requirements for May production, which is scheduled to average 2000 of the eights daily, 5 days a week, another Ford steel buy is not expected until about May 20. This, of course, does not preclude the placing of small pickup lots.

Bid for Ford Engines

By painfully slow stages Ford assemblies of the eight are gaining. The rate this week will still be considerably below 1000 daily. While the lid is on at the Rouge works on discussion of technical difficulties three major causes are believed responsible. One concerns the valves and the valve mechanism, the second is casting the engine in one block, the third is undue heating of the engine.

Last week it was reported that Continental Motors had attempted negotiations to make 50,000 of the eight engines, and that several smaller foundries in the Detroit area also were angling for such a contract. It is regarded as a certainty, however, that Ford will not go outside his own foundries for the engines.

Various rumors have been current that the eights already distributed among dealers would be recalled. Invariably these reports have named more cars than have been assembled. The original display cars, it is understood, have been or will be returned to Detroit. Where other manufacturers change models slightly from year to year, taking the transition in easy stages, the Ford practice is to take all the grief at once, hence a concentration of difficulties in making an entire changeover.

Ford Releasing Parts

There is an atmosphere in Detroit that Ford is clearing the decks for action. Releases on parts, in addition to steel products, are being issued in varying volume. Malleable brake drums and cloth fabric for about 165,000 units have been placed. Windshields for about 55,000 units have been distributed. Spring releases for 30,000 cars; wheels for 50,000; one maker of frames for commercial cars is running off 400 daily. It is evident that it will be a month, perhaps longer, before a balance bank of parts is built up.

Chevrolet, aside from taking a steady flow of finished steel items, has increased its working hours in several Detroit divisions. Three shipments of steel by water so far this season have augmented rail deliveries. Since April 1, Chevrolet registrations have made remarkable strides. Last week, on a 4-day average for various departments, Chevrolet was turning out over 2000 units daily.

Plymouth production is not far from 1000 units daily, 5 days a week.

Pontiac, at 225 units 4 days a week, is next largest producer, after Chevrolet, in the General Motors line. Buick has curtailed to 200 cars daily, 4 days a week, and its steel releases have been subsiding.

Recently, Willys-Overland was rushing specifications for tools and dies for the new model it plans, but whatever change was in prospect appears to have encountered delay, probably awaiting any new policy that the return of John N. Willys to the saddle may bring. A one-piece radiator shell was in prospect for Willys.

Auburn is scheduling the appearance of a new body. Because Hudson-Essex production has been slack the inevitable rumor of slight changes has cropped out. Two new convertible bodies are now being offered.

Little support to production is forthcoming from Cadillac, Lincoln, Hupp, Packard and Reo, the aggregate for all five probably not exceeding 600 units a week. Rockne production has declined somewhat, now that dealers are stocked.

Predicated largely upon slow but steady progress by Ford and a rather steady gait by Chevrolet and Plymouth, Detroit is forecasting that May output will approximate 150,000. In each of the first four months the rate has held rather closely to 125,000 units. Through the summer and into the early fall Ford production is more likely to increase than decrease, hence the bulge which usually appears in automobile production at the turn of the first quarter into the second may come this year in May or June.

Graham Profit Notable

Graham-Paige is a subject for discussion in automobile circles because this maker turned a 1931 net loss of $4,735,926 into a first quarter, 1932, net profit of $166,589. In the first place, the radical design changes in Graham's 1932 models were well received. The company cut costs in offering fewer body styles, only one chassis. Last year Graham made five types of cars on four wheelbases. This year there is one chassis, four body types, concentration on the eight.

Factory sales branches, of which there were 26 a year ago, have been

largely abolished, thus doing away with a large deficit-producing item.

And with it all must be remembered that Graham's base price is $1095 for the eight, thus far removed from the popular low-priced field which has taken more than its share of 1932 popularity.

Here and There in Industry

AMERICAN MANGANESE BRONZE CO., Holmesburg, Pa., has purchased the equipment and all assets except real estate, of Paul S. Reeves & Co., Broad and Catherine streets, and of the Caskey Brass & Bronze Co., Richmond and York streets, Philadelphia, operations to be consolidated at the Holmesburg plant. Samuel K. Reeves, president of Paul S. Reeves & Co., has become a director and vice president of American Manganese Bronze Co. and Frank E. Shipley, president of the Caskey company, has become identified with the sales department. Thomas H. Addie will continue president.

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Concrete Reinforcing Steel institute has moved its general offices from the Tribune tower to 333 North Michigan boulevard, Chicago.

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Maryland Steel Products Co., Baltimore, has moved its general offices to 1001 North Calvert street, corner of Eager street.

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J. M. & L. A. Osborn Co., Cleveland, has moved its Detroit office and warehouse to 690 Amsterdam avenue, formerly the location of Follansbee Bros. Co.

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Lighting Appliance Co. Inc., New York, has formed a Canadian branch, Lighting Appliance Co. of Canada Ltd., and is opening a plant at Montreal.

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Norris Machine Co., Houston, Tex., has taken over the Automotive Machine Shop in Houston and will continue its automotive machine work. G. O. Norris is owner.

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United Iron & Metal Co., Pittsburgh, dealer in iron, steel and nonferrous scrap has moved its offices from the Grant building to its own building at Ninth and Bingham streets, Pittsburgh.

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Jefferson Electric Co., Bellwood, Ill., a suburb of Chicago, has completed removal of its plants Nos. 1, 2 and 3 to its new plant, which has just been completed. Production of fuses, outlet and switch boxes, transformers and ignition coils is under way. Executive offices, engineering and drafting departments also have been removed to the main plant.

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Aluminum Industries Inc., Cincinnati, is forming a Canadian subsidiary, Permite Products of Canada, Ltd., with headquarters at 22 Hayter street, Toronto, Ont.

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Valdez Screw Products Co., Dallas, Tex., has been organized to distribute bolts, nuts, washers and screw products, opening its warehouse at 2823 Ross avenue. P. S. Valdez is president and manager.

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Midland Tube & Pipe Co., Bordentown, N. J., manufacturer of seamless tube and pipe, has appointed Theodore L. Dodd, 80 East Jackson boulevard, Chicago, its district sales representative.

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Logan Iron & Steel Co., Burnham, Pa., is installing a new hot bed on its 18-inch 3-high bar mill. This mill was built in 1894. The new hot bed is of the company's design and construction.

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Jaeger Machine Co., Columbus, O., by action of its stockholders, has approved the sale of its Duplex Foundry division at Elyria, O., to Lloyd Brown, chairman of the board. Purchase will be by exchange of stock at book value.

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Hobart Howry Co., Sioux Falls, S. Dak., manufacturer of refrigerating machinery, H. B. Howry president, has moved its offices to Kansas City, Mo. It has opened offices in the Exchange building, Twelfth street and Grand avenue.

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Lincoln Electric Co., Cleveland, has appointed as its sales agent in Mexico for its welders and supplies and motors, La Consolidada S. A., Mexico, D. F. This company was formed in 1900 as a branch of the Isaac Joseph Iron Co., Cincinnati. The present company was organized in 1907. Its facilities include a large bolt and nut plant, rolling mill, cadmium and chromium plating department, spring department and equipment for production of steel and nonferrous castings, babbittt, solder, lead pipe, sheet lead and copper and steel wire nails.

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Winfield H. Smith Inc., Springville, Erie county, N. Y., has appointed the Ohio Ball Bearing Co., 6531 Euclid avenue, Cleveland, representative in that district for its gears, speed reducers and allied products. Complete stock will be carried.

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National Lighting Protection Co., S. D. Kretzer president, has been organized at St. Louis by consolidation of several manufacturers of lightning rods. A plant has been obtained at Thirteenth and Rutgers streets and a machine shop and foundry have been added.

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Pittsburgh Equitable Meter Co., Pittsburgh, has acquired the capital stock of Merco Nordstrom Valve Co., San Francisco, and will operate it as a division. W. F. Rockwell of the Pittsburgh company becomes president of the Merco Nordstrom company. Warehouse stocks of both companies will be carried concurrently and sales offices of each will be available to both.

□ □ □

Alco Products Inc., a division of the American Locomotive Co., New York, has acquired the business, goodwill, patents and essential personnel of the Jackson Engineering Corp., Tulsa, Okla., designer and manufacturer of gasoline recovery and stabilization plants and other equipment for the gas and oil industries. The change was effective as of March 1.

□ □ □

Permold Co., Cleveland, manufacturer of permanent mold aluminum castings, has appointed C. J. G. Fischer, 721 East Seventh street, Plainfield, N. J., its representative on the Atlantic seaboard. Rex I. Lee, A. L. Edwards and E. D. Loomis, 212 Humber building, Highland Park, Mich., have been made representatives in Michigan and Toledo, O.

□ □ □

Fafnir Bearing Co., New Britain, Conn., manufacturer of ball bearings, has moved its office at Detroit from 120 Madison avenue to 502 New Center building; at Cleveland from the Swetland building to 407 Union building, 1836 Euclid avenue; at Los Angeles to 417 West Pico street. Distribution of Fafnir bearings in New York and the Metropolitan district is now in the hands of the L. C. Biglow Co., 250 West Fifty-fourth street. R. W. Powell has been placed in charge of the company's sales in northern Ohio, at the Cleveland office.

EDITORIAL

Super Cutting Tools vs. Free Machining Steel

TECHNOLOGICAL progress always involves rivalry. Several decades ago a classic example was the competition between projectiles and armor plate. Someone would develop a shell that easily penetrated the best existing plate, whereupon steelmakers would not rest until they had perfected armor capable of resisting the projectile. This provoked renewed efforts on the part of shellmakers, and the race for supremacy was on—each side alternately holding short-lived advantages.

Today rivalry accompanying scientific progress is more pronounced than at any time in the past, yet it lacks something of the spectacular because it is more commonplace. Twenty years ago the projectile-armor plate drama had the stage largely to itself; today there are so many technical plays in progress that none stands out in bold relief. Also a tragedy—the business depression—now playing to full houses, has diverted attention of industry from many dramatic features of competition in technology.

Of the numerous recent developments now exerting a strong influence on processes in the finishing of steel and other metals, none is more far reaching in its effect than the improvement in cutting tools. Three and a half years have passed since tungsten carbide tools were introduced in this country. In this brief period they have won wide acceptance. Tantalum carbide material has been developed and numerous other alloys have been introduced or improved. As a result it may be said that the advances in the art of cutting in this brief span of less than four years are far more important than the progress recorded in any previous decade.

New Tools Boon for Hard Materials, But Grinding Also Has Advanced

Offhand one would think that the immediate accompaniment to improvement in cutting tools would be an increase in the use of materials which hitherto had presented difficulties in machining. This has happened to a moderate degree. Admittedly the advent of "super" cutting materials has been a boon to manufacturers who were encountering trouble in shaping some of the tougher alloys and other materials which do not yield readily to ordinary machining operations. But here the potentialities of improved cutting facilities sometimes have come into competition with grinding — a process which likewise has made rapid strides in recent years.

Another question of direct importance to makers and users of machinery steels has to do with the future of the so-called "free-cutting" stock. Will the advent of improved tools result in a tendency to give less consideration to free machining properties?

Authorities to whom this question has been put are careful not to make definite predictions, but on the strength of past and present experience they see no signs of a loss in interest in free machining steels. "Imagine yourself standing back in 1900," writes one commentator, "when high speed steel was first being distributed throughout the metalworking industry. You might have prophesied that with this marvelous new tool steel there would be little interest in free machining products. But now in retrospect we can see that industry not only adopted high speed steel but worked at the same time for freer machining qualities."

Necessity for Good Finish Justifies Use of Free Cutting Stock

Operators of machine shops during the first two decades of this century will recall that in adopting free cutting carbon steel and high speed tool steel, industry scrapped a large proportion of existing machine equipment and installed more powerful units. The same change is going on now, as witness the heavy lathe, described in a recent issue of STEEL, which has been designed to afford study of the full potentialities of the newest "super" cutting materials.

Many years will elapse before all machine shop equipment is uniformly adapted to tungsten carbide, tantalum carbide and similar cutting materials. As long as the old tools remain —and they will be found in taps, milling cutters, etc. for a long time—the demand for free cutting stock will continue as strong as ever.

But even assuming that every tool in industry were tipped with the remarkable new cutters, is it not likely that the property of free cutting still would be attractive? Finish daily is assuming greater importance. Industry constantly is demanding closer tolerances. Free machining bar stock takes a better finish than steel that does not machine easily. It is probable that free cutting steel will justify its existence on the score of finish alone.

The rivalries provoked by the advent of new cutting tools are many and intricate, but they do not seem to menace the well earned popularity of free machining steels.

THE BUSINESS TREND

Incompetence of Congress Is New Menace

BUSINESS sentiment faced more difficult hurdles in April than in any month of the depression. Looking back from the threshhold of May, we now can appreciate the comparatively calm manner in which the leaders of industry have met and combated powerfully destructive forces.

Perhaps the most disappointing development in April was the demoralization in congress. After giving a fairly good account of themselves early in the year, our representatives at Washington recently have put on an exhibition of such ignorance and incompetency that their continued presence at the seat of government threatens to become a national liability.

The inability or unwillingness of congress to deal sanely with the problem of government expense now has reached a serious stage. The demonstration last Wednesday showed more clearly than any other act that a great many congressmen have no adequate conception of the need for economy. Many of them apparently have no idea of the relation of salaries to cost of living.

Political Expediency Blinds Public Servants To Need of Sane Measures

In their outburst of opposition to proposed salary adjustments they virtually tell their constituents they are in favor of raising government salaries. Even those few who seem to recognize the necessity of economy are talking in terms of 10 per cent. A mild cut of this nature does not offset the lowered cost of living. A 10 per cent cut still accords the recipient more real income than he had in 1929. Washington should be told about the 25 to 75 per cent slashes in executive salaries suffered in the industrial world.

There are a score or more of able representatives in the house, but their voices are drowned out by the overwhelming chatter of demagogue nitwits who have become so intoxicated by the power they have wielded that they have lost all sense of responsibility. As long as the unfortunate blind sheep in this flock of insurgents continue to follow the present reckless leaders, there is little hope of constructive legislation from the lower house.

Another hurdle for business sentiment was the array of first-quarter earnings statements. Fortunately the effect of these discouraging reports was discounted in advance. The figures in cold type only confirmed what already had been known or was expected.

Reasonable Banking Service Assured for Well Managed Industrial Firms

The outstanding favorable factor that helped to sustain hope throughout the month was the improved condition of banks. It is declared on good authority that in certain important industrial centers no company need fear lack of adequate banking support providing its management has been sound. Officers of many industrial concerns have noticed a more helpful attitude on the part of bankers during the past month. It is true that executives who have failed to put their houses in order are going to find it hard to induce bankers to pull them out of the hole. But on the basis of present indications, companies that have economized and have otherwise tried earnestly to adjust themselves to current conditions will be accorded a reasonable line of credit.

Industrial activity has not changed appreciably for several weeks. The determined drive of leading automobile manufacturers has met with a degree of success, which now is being reflected in stepped-up schedules and somewhat heavier purchases of materials and parts Freight shipments are up slightly, and in several fields of industry mild signs of favorable changes are evident. However, the general picture is one of continued activity at low levels.

Galvanized Ware Shows Increase in February

Reports on production and shipments of galvanized sheet metal ware to the department of commerce by a large proportion of the industry indicates an increase in February over January, although both were below the figures for these months in 1931. Comparisons follow:

In Dozens

1931	Pails and Tubs Production	Pails and Tubs Shipments	Other Ware Production
Jan.	103,677	133,977	23,716
Feb.	132,781	120,723	34,347
2 mo.	236,458	259,261	58,063
March	146,438	144,637	31,542
April	143,258	140,080	34,929
May	121,413	122,072	28,390
June	92,460	90,747	26,304
July	103,345	114,134	26,970
Aug.	136,003	129,693	34,709
Sept.	110,253	120,851	32,276
Oct.	98,340	88,270	26,626
Nov.	67,145	72,011	15,760
Dec.	72,558	63,163	11,758
Year	1,326,511	1,342,566	327,327
1932			
Jan.	87,096	88,382	13,612
Feb.	110,474	105,966	21,472
2 mo.	197,570	194,348	35,084

January Steel Barrel Volume Shows Upturn

February production, shipments and unfilled orders for steel barrels increased over those of January, according to reports to the department of commerce. However, the figures are below those of corresponding months in 1931. Comparative figures follow.

1931	Production	Shipments	Unfilled orders within 30 days
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March	550,583	554,332	242,626
2 mo.	871,948	877,107	
April	591,399	600,566	253,622
May	610,788	618,801	248,138
June	552,955	549,781	239,290
July	580,565	581,450	238,258
Aug.	449,590	455,502	235,002
Sept.	451,562	452,960	205,676
Oct.	489,555	492,145	177,673
Nov.	453,547	444,201	182,740
Dec.	382,483	385,435	150,650
Year	5,984,975	6,010,280	
1932			
Jan.	359,685	352,135	168,365
Feb.	367,472	369,882	189,882
2 mo.	727,157	722,017	

Boiler Orders Lessen

Orders for steel boilers in February included 204 units, of 244,927 square feet, compared with 282 units, of 267,268 square feet in January. Total units for the two months was 486, compared with 1046 units for the corresponding two months of 1931, according to figures compiled by the department of commerce by 72 manufacturers.

Steel Furniture Orders Shrink in Value

Orders and shipments of steel furniture underwent further contraction in February from January, according to reports from 52 manufacturers to the department of commerce. Decline in prices is responsible for some of this shrinkage, statistics in this trade being on the basis of dollar value. Comparative figures follow:

(In Dollars, 000 Omitted)

1931	Business Group New orders	Business Group Shipments	Shelving New orders	Shelving Shipments
Jan.	1,840	1,768	417	422
Feb.	1,478	1,563	401	382
2 mo.	3,318	3,331	818	804
March	1,487	1,522	455	481
April	1,424	1,481	408	423
May	1,306	1,305	506	409
June	1,272	1,221	452	449
July	1,092	1,074	328	371
Aug.	1,010	1,057	307	358
Sept.	1,059	1,188	304	310
Oct.	1,114	1,078	304	310
Nov.	910	956	267	226
Dec.	911	1,075	295	298
Year	14,903	15,287	4,447	4,440
1932				
Jan.	966	977	267	269
Feb.	742	801	212	229
2 mo.	1,709	1,778	479	497

Gray Iron Volume Back To Basis of January

Members of the Gray Iron Institute, Cleveland, reporting on production and new business for March indicate a slight drop from February, to about the level of January. Unfilled orders show a slight increase over February. The business outlook, in the opinion of reporting members, shows an improvement. The Chicago area showed greatest activity and small foundries produced at the best rate.

Worcester Foundries Gain

Production by foundries in the Worcester, Mass., district in February showed a gain over that of January, with 912,888 pounds of castings, compared with 810,035 pounds in January. The production in February, 1931, was 1,605,245 pounds.

Truck, Tractor Sales in Steady Retrograde

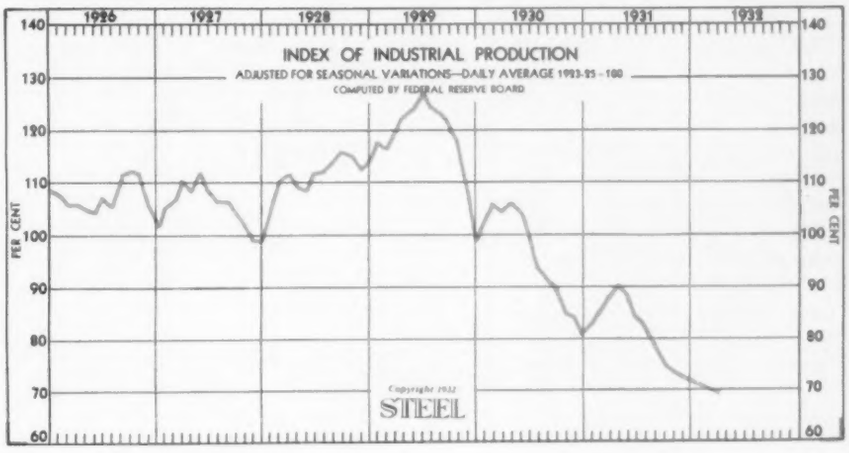
March shipments of electrical industrial trucks and tractors, as reported to the department of commerce by 10 leading manufacturers, consisted of 20 units, compared with 26 in February and 29 in January. The total for three months at 75, is far below that of first quarter of 1931, at 187 units. Comparisons follow:

1931	Total	Shipment—Domestic	Shipment—Export
January	38	33	5
February	56	50	6
March	93	84	9
3 mo.	187	167	20
April	71	48	23
May	69	69	.....
June	75	50	25
July	78	63	15
August	50	37	13
September	43	39	4
October	17	16	1
November	21	19	2
December	22	21	1
Year	633	529	104
1932			
January	29	29	.....
February	26	26	.....
March	20	20	.....
3 mo.	75	75	.....

River Shipments Growing As Season Advances

Shipments of iron and steel products by river in the Pittsburgh district increased in March over earlier months but fell below the totals for the corresponding month in 1931. March shipments on the Monongahela river were the largest since May, 1931, but were well below those of March, 1931. Other figures also showed a loss, as shown in the following comparison:

1931	Allegheny	Monongahela	Ohio
Jan.	50	90,405	88,089
Feb.	.....	58,847	75,264
March	.....	76,137	104,792
3 mo.	50	225,389	268,145
April	1,250	57,751	91,570
May	1,330	35,373	59,611
June	500	21,340	46,945
July	717	21,917	39,300
August	5,800	14,522	49,164
Sept.	8,525	25,508	49,269
Oct.	2,705	24,383	49,059
Nov.	5	24,338	42,247
Dec.	.....	21,360	51,138
Year	20,882	471,881	746,448
1932			
Jan.	.....	25,327	45,199
Feb.	2,200	20,089	40,737
March	.....	32,242	33,254
3 mo.	2,200	77,650	119,190



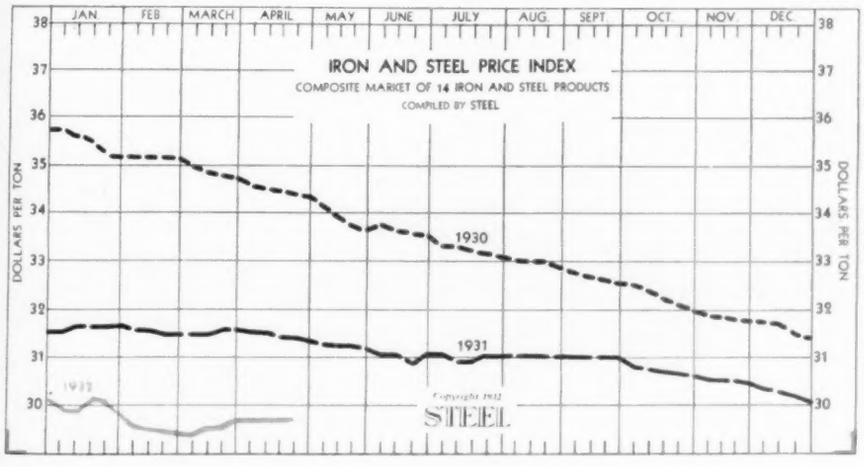
March,	1932	68
Feb.,	1932	70
March,	1931	87

Index of Industrial Production Reaches New Low at 68

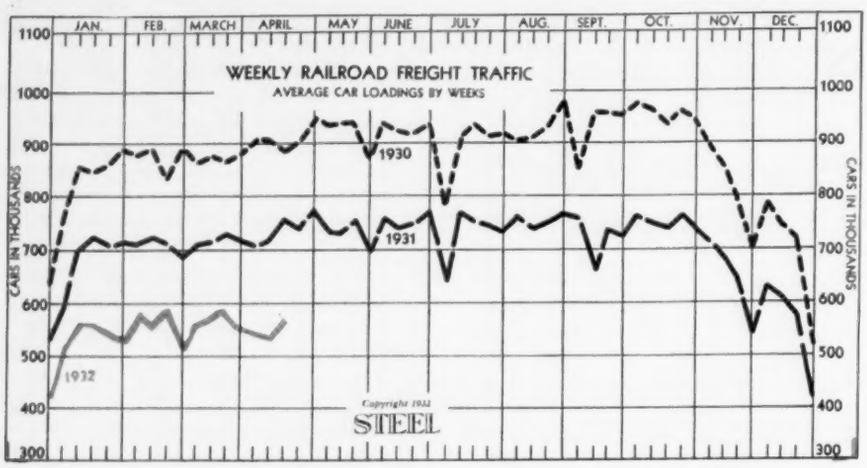
The Federal Reserve board's index of industrial production thus far has shown a lack of stabilization. The March index was off two points to 68 from the revised index for February. The current figure not only marks a new low but is the eleventh consecutive decline. A year ago a gain from 86 to 88 took place, while in 1930 the index was off one point to 106. Among the component parts of the index, manufactures dropped three points to 65 with adjustment for seasonal variations. Building construction dropped one point to 26 in value of contracts awarded. In the manufacturing group, iron and steel declined from 41 to 34.

Composite of Iron and Steel Prices Reflects Marked Steadiness

Marked steadiness in iron and steel prices generally is reflected in STEEL's composite. At the beginning of April the index stood at $29.81. A week later downward revisions in pig iron carried the barometer down to $29.74, where it remained throughout the remainder of the month. The only exceptions to the general stability of the price structure are found in the East, where imports of pig iron are a factor on iron quotations, and in Detroit, where chronic weakness in flat rolled material reappears occasionally. With the present sustained low volume of demand, there is small likelihood of important fluctuations in the trend of iron and steel prices.



		1932	1931
April	23	$29.74	$31.51
April	16	29.74	31.59
April	9	29.74	31.67
April	2	29.81	31.67
March	26	29.81	31.71
March	19	29.57	31.71



	1932	1931
April 16	566,729	759,494
April 9	544,806	737,934
April 2	544,961	727,852
March 26	561,118	740,079
March 19	584,634	744,253
March 12	575,481	733,580

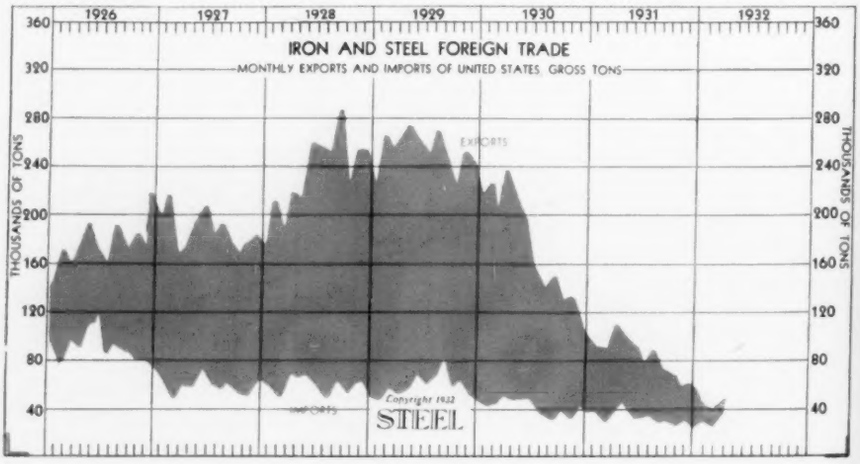
Volume of Freight Expands in Third Week of April

Loadings of revenue freight for the week ending April 16 totaled 566,729 cars, according to reports from the car service division of the American Railway association. This was an increase of 21,293 cars compared with the movement in the preceding week, but 192,765 cars below the corresponding week of 1931 and 325,977 cars under the like week two years ago. Loadings of merchandise less than carload lot freight totaled 186,924 cars, a drop of 763 below the preceding week, while increases were reported for miscellaneous freight, grain, coal, forest products, ore, coke and livestock. The greatest gain, 8663 cars, was reported for miscellaneous freight.

Steel Exports Gain 23 Per Cent; Trade Balance Slumps

Both export and import trade in iron and steel products was carried on in greater volume in March than in February. Exports of iron and steel products in March totaled 49,927 tons, a gain of 23 per cent compared with the movement in the preceding month, but a sharp drop compared with the exporting of 109,324 tons in March, 1931. Meanwhile, states the department of commerce, imports were gaining more than 53 per cent, from 26,738 tons in February to 41,031 tons in March, thereby reducing the trade balance of 13,759 in February to 8,896 tons for March. Exports during the month were the largest since last December, while imports were the largest since last April.

Exports	Tons
March, 1932	49,927
Feb., 1932	40,492
March, 1931	109,512
Imports	
March, 1932	41,031
Feb., 1932	26,738
March, 1931	40,401


1926 1927 1928 1929 1930 1931 1932
IRON AND STEEL FOREIGN TRADE
MONTHLY EXPORTS AND IMPORTS OF UNITED STATES, GROSS TONS
360 320 280 240 200 160 120 80 40
THOUSANDS OF TONS
EXPORTS
IMPORTS
Copyright 1932
STEEL

Automatic Screwdown Control Saves Time on Roll Settings

BY T. R. RHEA

Industrial Engineering Department,
General Electric Co., Schenectady, N. Y.

AUTOMATIC preset screwdown control for rolling mills is a system whereby a number of roll positions may be set up on a "preset" panel and by operation of a "pass selector" switch located in the mill pulpit each of the preset roll positions may be selected. Whether the succeeding passes are straight reductions or whether edging passes are interspersed, the automatic control will cause the rolls to move in accordance with the program previously set up.

Advantages of an automatic preset screwdown control are: Quality of product as to size; elimination of lost time in adjusting roll opening by hand control; and labor saving. Advantages of the particular form of control described in this article, in addition, are: Flexible and simple preset panel, which does not require an electrician to make the program setup; rapidity with which preset program may be changed; and accuracy of control in bringing the rolls to the predetermined position.

This form of control also has the advantage of being extended readily to control the setting of the edger rolls on universal plate mills, at the same time the horizontal rolls are set. Once a definite program has been set up, a single operation of the pass selector switch will cause both edger and horizontal rolls to assume their predetermined positions. Such a system obviously could be applied to the various screwdown operations on a structural mill.

The control system consists of simple and standard elements. Let us first consider the theory and operation of these elements and then gradually build up our control system out of these elements.

The thyratron tube as here used is merely a convenient form of relay that can be controlled with little electrical power and does not require any contacts to actuate it.

The tube, see Fig. 2b, is an electronic tube containing mercury vapor to enable it to carry amperes instead of micro or milliamperes as in a more perfectly evacuated tube. The starting of the current flow is controlled by the grid potential. When the grid has a sufficient negative potential with respect to cathode, Fig. 2c, the tube will not conduct current. Should this grid potential become slightly positive (or less negative) beyond a certain critical value, the tube conducts as long as the plate potential remains positive, as in Fig. 2a.

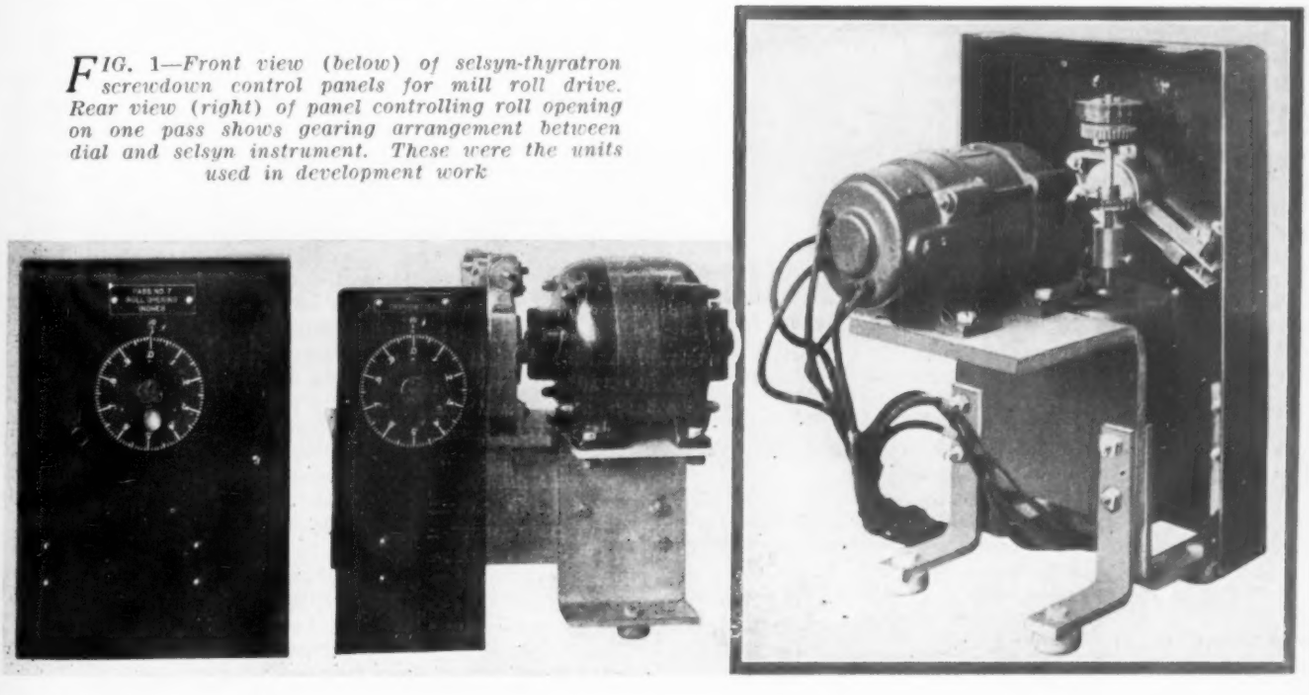


FIG. 1—Front view (below) of selsyn-thyratron screwdown control panels for mill roll drive. Rear view (right) of panel controlling roll opening on one pass shows gearing arrangement between dial and selsyn instrument. These were the units used in development work

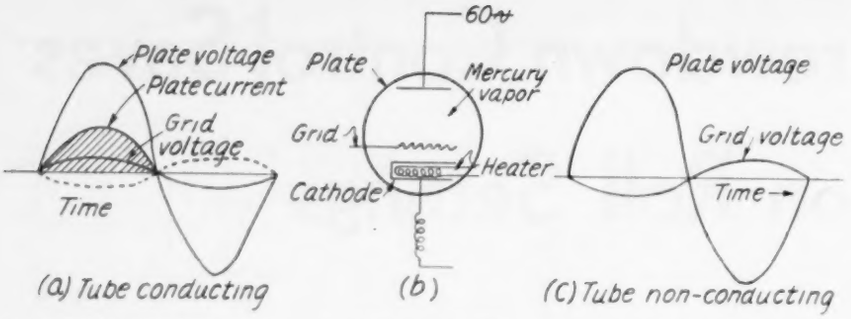


Fig. 2—Diagram (b) of thyratron tube and voltage curves as tube is (a) conducting and (c) nonconducting

With alternating current applied to the tube it will pass current only from the plate to the cathode when the plate is positive. When the plate is negative, no current is passed.

Thus is established a convenient form of relay. By imposing on its grid a few volts of same phase as the plate, it will pass a direct current. This direct current can be made to operate the coil of another relay or contactor. It is used in this application only as a relay to eliminate contacts.

Selsyn Units Are Used

The selsyn instrument, selsyn being a trade name devised by the General Electric Co. from the words self-synchronizing, is a single-phase transformer with one primary and three secondaries. The primary can be rotated so that its "coupling" can be changed with respect to each of its secondaries. A diagram of the instrument is shown in Fig. 3a. The amount of voltage induced in each secondary depends upon the relative position of the rotor. Actually the secondary is a distributed winding identical with a three-phase Y winding with the neutral made inside the machine.

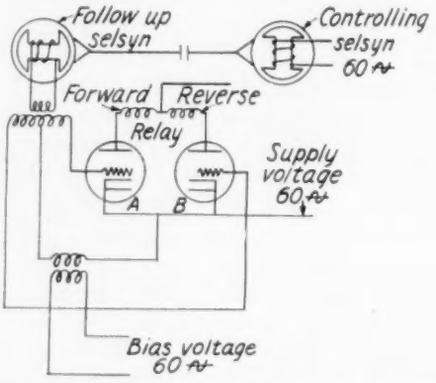
If another identical selsyn unit has its secondary or stator connected to the first, then a single-phase transformer system is effected whereby a single-phase alternating-current voltage of varying magnitude may be obtained as the two rotors are displaced relative to each other. Neglecting transformer losses and line drop between the two selsyn units the voltage appearing at the rotor slip rings of the second selsyn unit will be the same magnitude as the input when the two rotors are in correspondence as shown in Fig. 3b. The voltage output will decrease as the rotors are displaced until they are 90 degrees apart, when there is zero voltage output. As the displacement is further increased the voltage reverses in phase and reaches a maximum at 180 degrees, and so on. The tabulation shows voltage versus displacement:

Displacement degrees	Voltage output relative to input (110 volts)
0	+110
90	0
180	—110
270	0

The variation is gradual between these points and has the form of a sine wave with respect to displacement.

Thus is provided a means of transmitting and regulating a voltage at a distance. No mechanical torque is transmitted between the two selsyn instruments and the magnitude of the voltage depends only on displacement. The time phase will be the same as the input voltage regardless of position, voltage drops neglected. This voltage will be applied to the grid and used to operate the thyratron relay.

These two elements furnish a means of making a simple follow-up system. Suppose it is desired to make a motor follow a remotely located selsyn unit, which will be operated by hand. Attaching one selsyn unit to the motor and turning the other by hand will produce an angular displacement between the two. When this displacement reaches one or two degrees, sufficient voltage will appear in the selsyn unit attached to the motor to cause the thyratron relay to function, which in turn will actuate the magnetic control of the motor. This will start the motor and keep it running until it has rotated the selsyn unit attached to its shaft and wiped



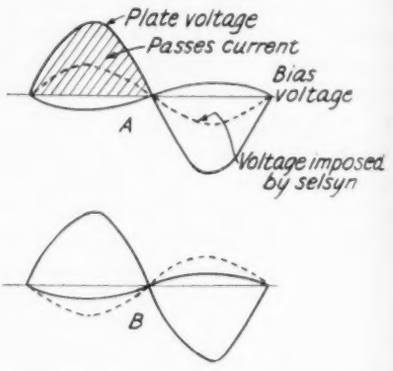


Fig. 4—Electrical diagram showing selsyn units connected to thyratron relays. Voltage curves are shown at right

out the angular displacement with respect to the remote selsyn unit. When this happens the thyratron relay opens and shuts down the motor. By using two thyratron relays, both forward and reverse action may be obtained.

Referring to Fig. 4, the voltage output is taken from the second selsyn unit, termed the follow-up selsyn unit, and impressed on the grids of two thyratron tubes in such a way that when one grid is made positive, the other is made negative. Thus with a displacement of the follow-up selsyn unit in one direction the forward contactor can be closed, and if displaced in the other direction the reverse contactor is closed.

If the controlling selsyn unit is moved in the forward direction the forward contactor is closed and remains closed until the screwdown motor has rotated the follow-up selsyn unit into correspondence. When it is in correspondence the contactor opens and the motor stops. If the controlling selsyn unit is moved in the reverse direction, the reverse contactor closes and the mo-

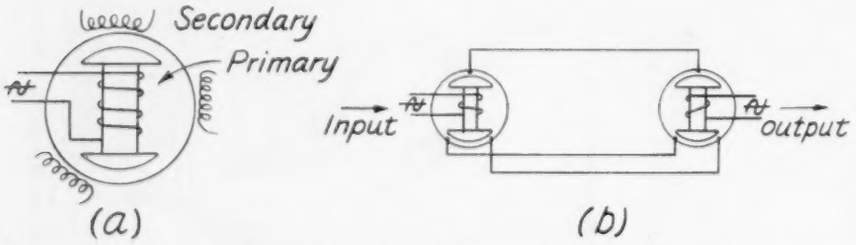


Fig. 3—Diagram (a) of single selsyn unit. Single-phase transformer system (b) obtained by interconnecting two selsyns

tor rotates until the selsyn units are again in correspondence.

Thus is established a simple follow-up system, without contacts or differential gears. Furthermore, the movement of the controlling selsyn unit involves a torque only sufficient to overcome its own friction. No torque has to be transmitted.

The next step is to provide a number of these controller or preset selsyn units, indicated in Fig. 5. By setting up the desired positions on selsyn units No. 1, No. 2 and No. 3, the screwdown motor can be caused to move into correspondence with them in succession as the contactors C_1, C_2 or C_3 are closed. Only one contactor is closed at any one time.

Limitations Are Cited

These are the elements for a simple "preset" follow-up control. Certain limitations are present. It will be noted that if the "preset" or controlling selsyn unit is rotated forward more than 180 degrees from the follow-up selsyn unit and then their secondaries are electrically connected together, the screwdown motor will rotate in the reverse direction to come into correspondence. That is, the follow-up will take the shortest path home. There would be no objection to this for rotary motion perhaps, but when applied to the screwdown this feature would be embarrassing to say the least. Therefore, when applying this system to a screwdown control the follow-up selsyn unit must be geared to the screwdown motor so that full travel of the rolls will not rotate the selsyn unit more than 180 degrees. This is, of course, true of any geared limit switch.

It is possible to arrange the voltage output of the selsyn unit so that a neutral of one or two degrees is obtained. That is, the selsyn rotors must be displaced one or two degrees with respect to each other before sufficient voltage appears to trip the thyratron relays. If the system is limited to an accuracy of 1 degree in 180 this would be an accuracy of 1/180. If the maximum roll opening were 50 inches the accuracy would be ±0.28 inches. Obviously this is not close enough for the purpose, and some vernier scheme must be added to improve the accuracy.

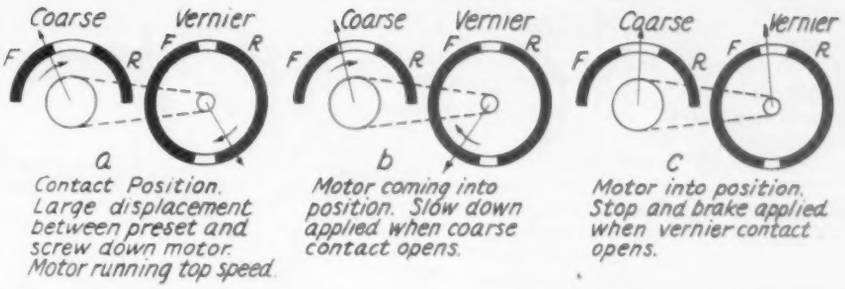

Coarse
Vernier
F
R
a
Contact Position. Large displacement between preset and screw down motor. Motor running top speed.
b
Motor coming into position. Slow down applied when coarse contact opens.
C
Motor into position. Stop and brake applied when vernier contact opens.

Fig. 6—Figurative system of coarse and vernier contacts, representing the two systems of selsyn units and thyratron relays

Furthermore, if the screwdown motor comes booming into correspondence at full speed it is almost certain to overshoot and reverse. If the neutral is narrow it may continue to overshoot on each side. Therefore, greater accuracy of stopping is required and some means of preventing overshooting must be incorporated.

Vernier System Added

To accomplish these ends, a double selsyn system can be used. To both the follow-up selsyn unit and to each of the preset selsyn units, a selsyn unit is geared so that for one degree rotation of the original selsyn unit the geared selsyn unit will rotate 20 degrees. This auxiliary selsyn system will control its own thyratron relays and will act as a vernier.

Figuratively, then there would be a system of contacts, for the thyratron tubes act only as contacts, such as shown in Fig. 6. The original selsyn system will be called the coarse system, for it acts only to bring the system into approximate correspondence, and the added selsyn system will be called the vernier system, for it begins to act where the coarse system leaves off, and brings the system into exact correspondence. The thyratron relays, actuated by the coarse system, will cause the screwdown motor to run at full speed in either the forward or reverse direction. While the coarse relay is closed the vernier is locked out. When the coarse relay opens as shown in Fig. 6b, the screwdown motor immediately is slowed down by means of shunted armature and hence approaches exact correspondence at a slow speed. This prevents overshooting and hunting. Also the vernier neutral may be possibly two degrees wide but due to the rear ratio of 20 to 1 this means a correspondence within 0.028-inch if the total roll opening is 50 inches.

Thus by the addition of the vernier selsyn system two desirable and necessary functions are added: Antihunting and accuracy of follow-up.

It will be noted that the automatic control simply controls the usual magnetic control of the screwdown motor. At any time control of the screwdown may be effected by hand in the usual manner.

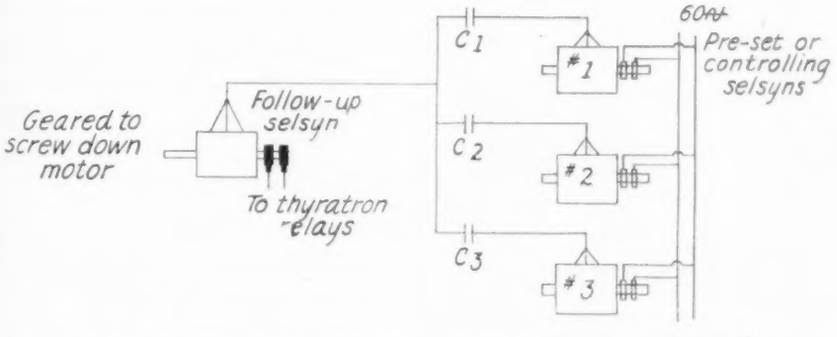


Fig. 5—Elements of a simple preset follow-up control for roll setting

Feasibility Demonstrated

This particular system is not untried as it has been built and the operation amply demonstrated. Furthermore, it is composed of simple, rugged devices and these elements have proved to be satisfactory control devices.

To illustrate its application, suppose there is a universal plate mill to which an automatic preset screwdown control is to be applied. Both the horizontal and vertical rolls are to be controlled automatically.

Assuming the maximum number of passes to be eleven, there will be required a program or preset panel containing eleven pairs of selsyns, one pair for each pass, as shown in Fig. 7.

The edging or vertical rolls possibly will require five adjustments during the eleven passes. Consequently five pairs of preset selsyn units are provided for this purpose. Actually the edging or vertical roll adjustment will be a complete and independent system identical with the horizontal roll system, so it is not shown in Fig. 7. However, both horizontal and vertical roll openings are controlled from the same pass selector switch.

The roller will set up on the program panel a definite schedule of

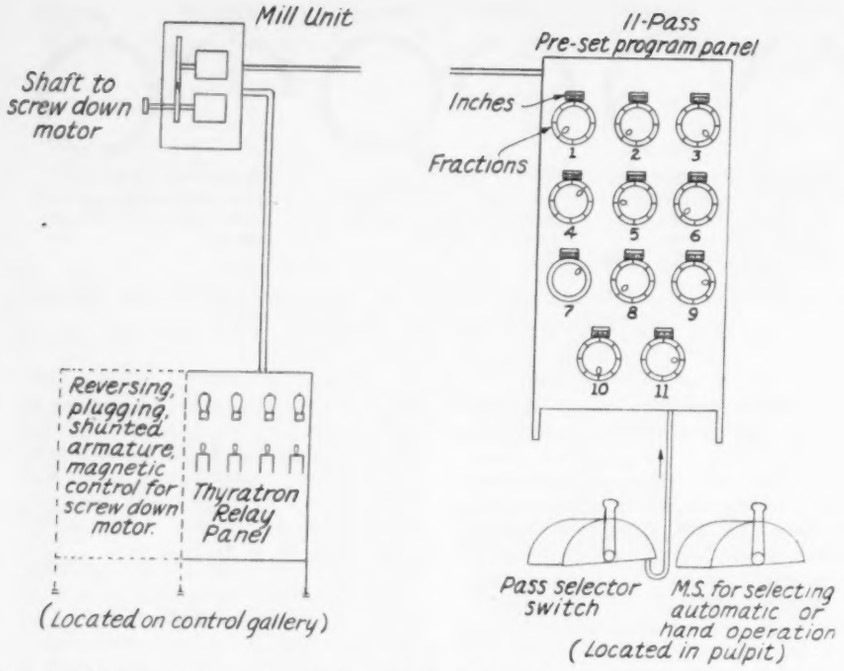


Fig. 7—Diagrammatic representation of preset panel and relay panel on which a program of 11 automatic pass settings can be established

both horizontal and vertical roll openings to roll a particular thickness of plate from a given slab. The program panel is set up easily since the dials are calibrated in inches of roll opening and fractions thereof. An operator could set up the entire board easily in less than a minute if he found it necessary to change to a new product a few slabs later.

Two Main Switches

After the program has been set up, the operator throws the master switch to automatic control. This master switch enables the operator to remove control from the automatic system at any time and control by hand in the usual manner if conditions warrant it.

For the purpose of selecting the passes the operator has a pass selector switch. This is a dial switch with a number of points, each point representing a new pass. However, this may be made as a ratchet device with a spring return handle so that it is only necessary for the operator to push it forward and release it in order to cause the rolls to assume the next position. When the final pass is completed the operator pushes the pass selector switch forward once and releases it and the rolls at once move to their position for the first pass on the next slab. In case of a cobble the operator always has recourse to the hand operated master switch for hand control.

With this arrangement an accuracy of stopping of 0.14 per cent may be obtained. Neglecting the important items of roll spring, mill temperature and back lash in the screwdown gears themselves, this means that on a plate mill having a 10-inch roll opening, the rolls can be set to within 0.014-inch each time. Such an accuracy allows for a 5-degree neutral on the vernier selsyn unit and a 20 to 1 gear ratio. However, in actual practice the system will *repeat* a given roll setting to within three or four thousandths of an inch roll opening each time since the device coasts about the same amount each time. Greater gear ratios between coarse and fine selsyns are possible with greater accuracy, the only limitation being the ability of the screwdown motor to stop the rolls promptly without overshooting and hunting.

Considerable Time Saving

The rapidity with which a new roll setting can be effected depends upon the screwdown mechanism, gears, etc. and the screwdown motor speed. The automatic control is not a limiting feature on these speeds. In actual practice, considerable time should be saved by automatic control over hand control since the rolls are moved to their new positions without plugging or jockeying back and forth trying to spot them.

For small changes of roll position the screwdown motor runs only on shunted armature. For example, in the plate mill under consideration with 10-inch maximum roll opening, a change in roll opening of ½ to ¼-inch would be made entirely at slow shunted armature speed. However, for a typical case, such a change would take place in 2 seconds or less. For greater changes in roll openings the limit is imposed by motor speed and screwdown mechanism arrangement. For such an arrangement, roll opening changes of several inches consume only about 2 second also, since the change is made at high speed.

Thus for ordinary drafts this control should be fast enough to suit any form of mill. However, should special conditions arise requiring faster speeds the system is flexible enough to provide them. The factors to be changed would be gear ratios, width of vernier selsyn neutral, and amount of shunted armature resistance affecting the slow speed condition.

Modifications Possible

For blooming or slabbing mills that may do jobbing work and where it is not deemed advisable to use a completely pre-set program panel, because of the frequent changes in product, a pair of selsyn units may be used. Such an arrangement would enable the operator to set up the next pass opening on the pulpit selsyns while the metal is in the rolls. After the metal clears the rolls, the operator will press a button or master switch and the rolls will take up the position just previously set.

With no increase in equipment such a single-pass arrangement could be made to cause the screwdown motor to follow at once. That is, the roll opening would be set by rotating the selsyn units in the pulpit, the screwdown motor following instantly.

On slabbing mills, for example, where the slab is turned on edge occasionally, no difficulty is encountered because the rolls must open up. The preset unit for this edging pass is set at the proper roll opening and the rolls move to that opening, even though the roll openings on either side may be many inches less. Such flexibility is difficult on any form of limit switch screwdown control, but involves no difficulty with the form of control described.

In short, this form of control is applicable to any sort of device which must be moved to a number of predetermined positions in quick and accurate cyclic order.

Engineers Co-operate in Exhibits for Museum

Twenty metallurgists, geologists and mining engineers, representing the American Institute of Mining and Metallurgical Engineers, recently visited the unfinished Museum of Science and Industry in the Fine Arts building, Jackson park, Chicago, to co-operate with the museum staff in the geology and mineral industries section for planning huge permanent exhibits for that institution. The museum will not be ready for opening for several years.

Welded Steel Frame House Is Largely Shop Fabricated

FOLLOWING closely the arc welded steel frame house erected in Cleveland last summer, a shop-fabricated custom-built home of the same type has made its appearance in Oberlin, O. This house is being erected by Steel-Bilt Homes Inc., Cleveland, a company which for several years has specialized in bolted steel frame residences. Myron T. Hill, Cleveland, was the architect.

The builder, although equipped to handle mass production of housing panels, had not previously used arc welding. Consideration of welding in its operations resulted from attention directed to the welded steel frame house built in Cleveland less than a year ago and erected entirely in the field at a cost of less than $100 more than a wood frame.

Four years ago a bolted, shop-fabricated steel frame dwelling cost roughly 25 per cent more than brick or tile; standardized shop detail brought this down to 6 per cent and the use of arc welding has further reduced costs to slightly more than 3 per cent. The field welded house, not completely fireproof, costs less than 2 per cent more than the dwelling built by traditional methods.

Little Scaffolding Needed

Were it not for the limitations of handling, transportation and street widths, an entire wall could be shop fabricated in one piece. For the Oberlin house, structural shapes were cut to length and the members for each wall panel lined up in a jig to insure accurate alignment, speed of assembly and welding. With this method, little scaffolding was necessary on the building site, and by doing almost all the welding under cover, inclement weather was not a factor for consideration. Wall panels and bearing partitions averaged 14 to 18 feet wide and one-story high with the weight of steel in each panel between 500 and 700 pounds. Shop fabrication was handled in the plant of the Ferro Steel Products Co., Cleveland.

First floor wall panels were erected and adjoining panels aligned temporarily with bolts and C-clamps. After being plumbed and leveled, the adjacent panels were arc welded together. First floor joists were next tack welded to the lower sill and then second floor joists were installed in a similar manner in the upper sill.

Wall panels for the second floor were raised with a gin pole and erection proceeded as with the first floor panels. The frame, shown in the accompanying illustration, was erected on the foundation in approximately two days. Welding equipment and electrodes manufactured by the Lincoln Electric Co., Cleveland, were used in the field welding.

Approximately 9 tons of steel were used in the job and the erection cost was $90 a ton, as compared with $120 a ton by other methods. The contractors hope to reduce this figure by $20 a ton when shop welders become more familiar with requirements for this type of work.

With ½-inch allowed between face brick and stud and ¾-inch between furring strip and stud, a 1¼-inch air space is provided and this is filled with rockwool insulation. Metal lath is used on the walls and a suspended ceiling allows a space of 1½ inches for pipes or conduits which must run at right angles to floor joists. Floors are concrete over metal lath with composition finished flooring set in mastic over the concrete.

Producing Wrought Iron With Alloying Elements

Production of wrought iron alloyed with nickel, with copper, with nickel, with nickel and molybdenum and with copper and molybdenum, has been announced by the Highland Iron & Steel Co., Chicago, a subsidiary of the American Chain Co. Inc. Several years of intensive research work preceded actual production of the new iron, it is stated.

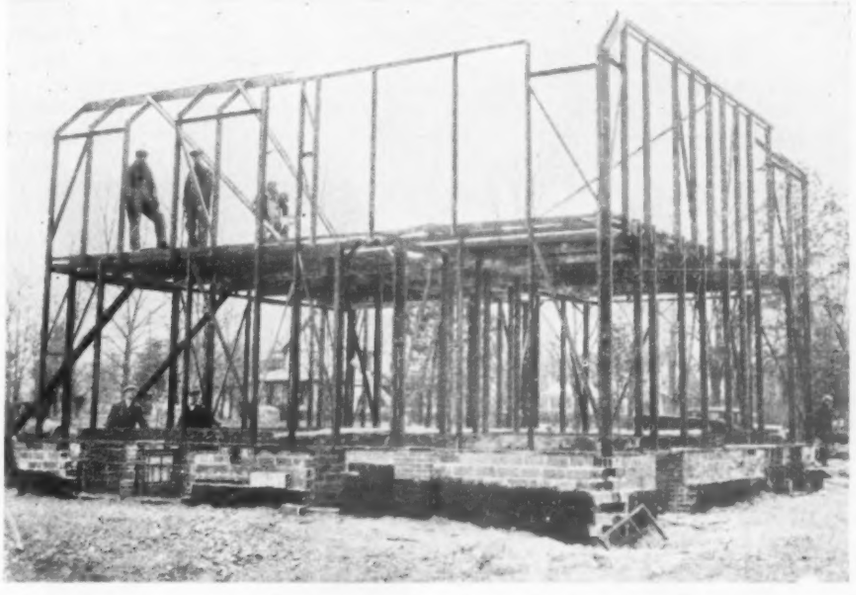
In addition to opening greater fields of usefulness for wrought iron without in any way changing the fibrous structure which is responsible for its endurance under vibratory stresses, the manufacturer claims development of the alloyed material has resulted in a 25 per cent increase in physical strength in the as-rolled condition.

Of the new alloys, wrought iron with nickel alone and with nickel and molybdenum have outstanding characteristics. Both have shown a marked increase in fatigue resisting properties. Heat treated wrought iron of these two types is said to show an increase in strength of 40 to 50 per cent over ordinary wrought iron.

Ironmaking in West Dates Back Over 300 Years

History reveals that ironmaking operations in the West preceded those of the Colorado Fuel & Iron Co., Pueblo, Colo. Remains of a crudely-built furnace prove that the early Spanish explorers smeltered iron near Fierro, N. M., more than 300 years ago.

After the ore had been smeltered, it was carried by burro train to Mexico City and is believed to have been shipped to Spain. Convict and slave labor from Spain is said to have been used.



All the steel for this welded frame house was erected in less than three days, erection being three-fourths complete when this view was taken. Wall panels and bearing partitions, averaging 14 to 18 feet wide and one-story high, and weighing up to 700 pounds, were fabricated in the shop and transported to the site

New Russian Stack Boosts Iron Rate

SIXTEEN days after having been lighted, the first blast furnace of the Eastern Steel Combine at Kuznetsk, Siberia, was producing pig iron at a rate of over 600 tons a day. As reported in the April 11 issue of STEEL, this stack was put into service on April 1 and the first cast of 68 tons was tapped on the morning of April 3.

During the first 11 days, total production was 2478 tons, but on April 11 the output for 24 hours was in excess of 400 tons and the wind was up to 43,000 cubic feet per minute. By April 17 total production had reached 3678 tons and the daily rate was better than 600 tons. At this time, wind had been increased to 46,000 cubic feet per minute and a coke consumption of 0.93 tons per ton of iron was being obtained.

First of Four Units

This furnace is the initial one of four which are part of a complete million-ton steelworks comprising fifteen 150-ton open hearths, two blooming mills, a rail and structural mill, billet mill, merchant and bar mills, with a 108,000-kilowatt power house and all auxiliary and maintenance shops required in operation of a steel plant. Freyn Engineering Co., Chicago, designed and is building the plant for the Russian company.

The new blast furnace is nominally rated at 750 tons per day, but later this may be increased to 850 tons. It has a hearth diameter of 20 feet 4 inches, a bosh diameter of 23 feet 7½ inches, an overall height of 92 feet 8 inches and a volume of 28,900 cubic feet.

It is expected that the No. 2 furnace, which is duplicate of No. 1, will be blown in later this year. Construction of No. 3 and No. 4 furnaces already is under way. The open hearth and some of the rolling mills are nearing completion and it is expected to start operations on these units within a few months.

Refractories for Use in Induction Furnace

Supplementing an article discussing construction and operation of coreless induction furnaces by E. F. Northrup, vice president and technical adviser, Ajax Electrothermic Corp., Trenton, N. J., published on page 39 of the June 4, 1931, issue of STEEL, Dr. Northrup points out that while certain recommendations were made regarding refractory materials for the furnace and methods of applying them, the method of making the melting chamber and the particular type of refractory used are quite independent of each other.

At the time the article appeared, considerable use had been made of TAM zircon as a refractory. This is a good material, Dr. Northrup states, especially for superheated cast iron, but later experiences with the recovery of corrosion-resisting steel scrap led to the adoption, for a basic refractory, of a mixture of magnesia and alumina known as Almag. This particular combination of properly prepared magnesia and alumina neither expands nor contracts to any appreciable or objectionable degree from room temperature to the pouring temperature, and furthermore has been found to be satisfactorily resistant to slags on the top of the metal.

In a particular installation 76 heats, 8000 pounds each, of corrosion-resisting steel were melted from one lining, which represents over $90,000 worth of metal in ingot form poured from this lining. The user of this 4-ton furnace reports that the refractory was removed while it still had considerable life in it, and that 100 heats is the objective for future linings of this type. The user also reports that the composition of the corrosion-resisting steel scrap was practically unaltered by the melting process.

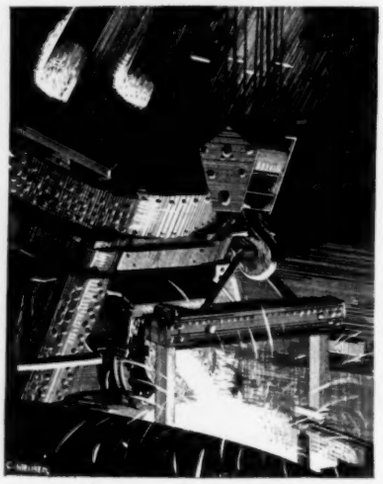
If an acid lining is required, the above method can be used with ganister in place of Almag, Dr. Northrup suggests.

Improves Technique for Forging Monel Metal

International Nickel Co. has developed at its Huntington, W. Va., plant an improved technique in the forging of large diameter monel metal bars, shafts, spindles, etc. It is now possible to obtain a uniform yield point in excess of 70,000 pounds per square inch, with ultimate tensile strength in excess of 90,000 pounds per square inch on forged bars from 3 to 6 inches diameter. Elongation value averages higher than 25 per cent. This decided increase in tensile properties undoubtedly will be extended to a greater range of sizes.

Foundrymen Arriving in Detroit for Thirty-Sixth Annual Convention

DETROIT this week becomes the foundry center of the United States, for beginning today members of four of the technical and trade associations in the foundry industry assemble in that city for convention sessions. The American Foundrymen's association opens its thirty-sixth annual convention and cooperating with and at the same time conducting meetings of their own during the week in Detroit are the Gray Iron institute, Malleable Iron Research institute, and the Foundry Equipment Manufacturers' association.



—Courtesy Charles Perry Weimer

In addition, a bit of general industrial color will be added by meetings of the Materials Handling institute, Electric Hoist Manufacturers' association and the American Society of Mechanical Engineers, the latter conducting its Three-M conference devoted to maintenance, materials handling and management.

Headquarters of all organizations will be at Hotel Statler and all sessions are to be held there. Numerous joint sessions have been scheduled on subjects in which there is mutual interest. Detailed programs for the Foundrymen's association, the Three-M congress and Materials Handling institute were announced in the April 4 issue of STEEL.

Foundrymen will have a busy week for in addition to technical and business sessions on various phases of foundry practice, numerous shop operation courses, roundtables and committee meetings are scheduled.

Many industrial plants in the Detroit area will be open to visitors and an interesting series of trips has been arranged. On Monday afternoon an organized tour will be made to the plant of the Great Lakes Steel Corp., and then to the blast furnaces of the Hanna Furnace Corp. Both companies are divisions of National Steel Corp.

Design for OXWELDING

By redesigning this table and other aluminum alloy furniture for oxwelded construction, the producer cut manufacturing costs 25 per cent.

and lower production costs

OXY-ACETYLENE welding lowers production costs because it provides a method of fabricating metal without slow and expensive mechanical jointing . . . By making joints stronger than the metal itself, it permits the use of lighter material or the substitution of shape-cut fabricated parts for castings . . . And by making a smooth, invisible joint, it makes painting, lacquering, enameling, or polishing easier and quicker.

If in your plant otherwise good designs are being shelved because their production cost is prohibitive, or if present production methods restrict your abilities as a designer, investigate the advantages that oxwelding offers.

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Welding Society Continues Activity in Code Work

ADVANCEMENT in welding, and in constantly broadening scope, was revealed at the annual meeting of the American Welding society in New York April 27-29. Technical sessions featured shipbuilding, structural welding and ductility in welds.

E. A. Doyle, consulting engineer, Linde Air Products Co., New York, retiring president of the society, in reviewing committee activities reported that recommendations have been drawn up for a code for resistance welding of structural steel; that there is no general demand for a code for welding low-pressure tankage; that an additional code for low-pressure work may be desirable; and that a subcommittee has been appointed to co-operate with the department of commerce in preparation of a session relating to safety in welding and plain cutting processes employed during construction or demolition of buildings.

Testing for Punchability

What are believed to be the first tests made to determine the punchability of weld metal have been conducted by the Carnegie Steel Co. for the subcommittee on the mill conditioning of finished rolled steel. According to Mr. Doyle, several tentative drafts of a proposed specification have been prepared and discussed with steel mill representatives. Agreement seems imminent, it was said, except to the propriety of including a requirement for the qualification of individual welders, this requirement being definitely opposed by some mills.

The subcommittee on marine boilers has completed rules for the construction of fusion welded marine boilers and pressure vessels.

Frank P. McKibben, Black Gap, Pa., consulting engineer of the General Electric Co., was elected president of the society, and at the same time was named recipient of the 1931 Miller medal for outstanding achievement in fusion welding of structural steel. A biographical sketch of Professor McKibben appears on Page 22 of this issue of STEEL. The medal award will be made at the fall meeting of the society in Buffalo.

A. E. Gaynor, John A. Roebling's Sons Co., New York, was elected senior vice president to fill the vacancy created by the advancement of Professor McKibben. Newly elected divisional vice presidents are: H. N. Ewertz, welding engineer, Austin Hastings Co., Boston, New York and New England district; A. F. Davis, vice president, Lincoln Electric Co., Cleveland, Mid-eastern district; and H. S. Card, editor, *Welding Engineer*, Chicago, Mid-western district.

The following directors were elected: C. A. Adams, Lawrence professor of engineering, Harvard university, Cambridge, Mass.; H. M. Hobart, consulting engineer, General Electric Co., New York; D. S. Jacobus, advisory engineer, Babcock & Wilcox Co., New York; and J. W. Owens, engineering director, Welding Engineering & Research Corp., New York.

Outline Welding of Ships

Welding as applied to shipbuilding was discussed at one of the early sessions Wednesday, with Capt. J. O. Gawne, United States navy, presenting a paper on "Welding on the U. S. S. NEW ORLEANS." L. C. Bibber, bureau of construction and repair, navy department, Washington, presented experimental verification of certain ideas which he advanced at the annual meeting two years ago regarding the method of calculating stresses in fillet welds. Gordon G. Holbrook, general superintendent, Federal Shipbuilding & Dry Dock Co., Kearny, N. J., outlined methods employed in welded barge construction at his plant.

Stressing the adaptability of wrought iron to welding, James Aston, A. M. Byers & Co., Pittsburgh, discussed the plastic and fusion types of welding of wrought iron. E. R. Hensel and E. I. Larsen, research laboratories, Westinghouse Electric & Mfg. Co., Pittsburgh, outlined a study of the transformation points of fusion weld metal, declaring that the magnetic transformation point is not appreciably affected by a variation in the nitrogen content of the weld and that the transformation and characteristics of various types of weld metal are so altered by severe hydrogen anneal that they become similar to those of pure iron.

A new process for making welded joints was described by H. S. George, research engineer, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y. Cause and cure of intergranular corrosion in austenitic steels were discussed by Dr. John A. Mathews, vice president, Crucible Steel Co. of America, New York.

One session was devoted to a symposium on the ductility of welds, with papers by nine speakers. At another session, spot welding was discussed by Carl DeGanahl, president, Fleetwings Inc., New York. Welding of extruded metal was discussed by I. T. Cook, research engineer, American Brass Co., Waterbury, Conn., and the production welding of light gage welding specialties, by Walter C. Campbell, superintendent, Electrolux Machine Operation, and Dr. R. S. Taylor, president, Electrolux research department, Servel Inc., Evansville, Ind.

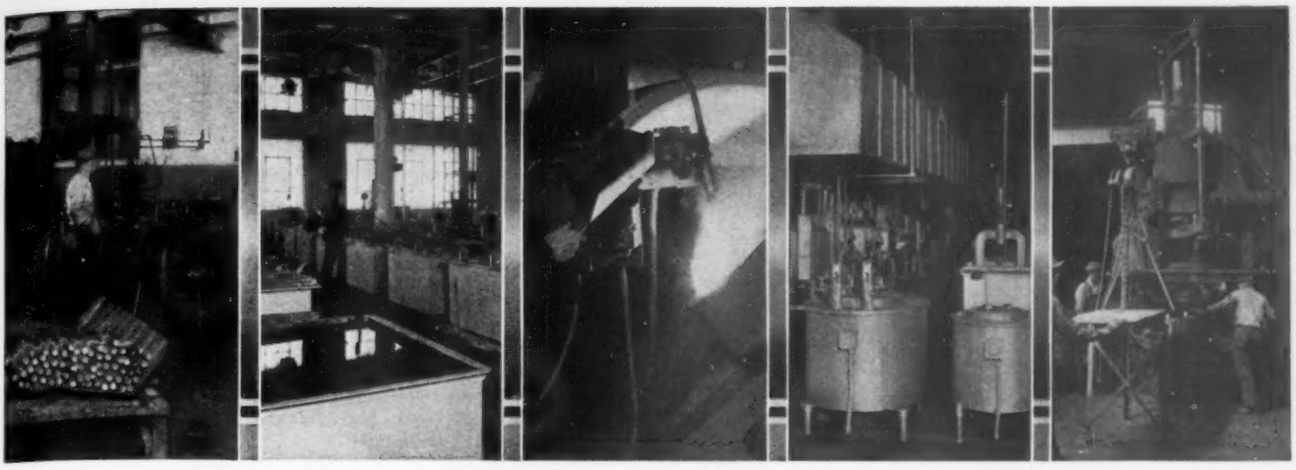
New York Skyscraper Will Use Chrome-Nickel Trim

Chromium-nickel corrosion resistant steel will be used as an exterior trim in spandrels on the 25-story insurance office building and penthouse to be erected at John, Gold and Cliff streets, New York. Between five and six miles of strip, up to 6 inches wide, and some sheet 18-8 alloy will be required for the outside work, specifications also requiring considerable aluminum sheets and other material.

Use of chromium-nickel in a large way as an exterior trim on this structure is the third building to be so decorated in New York, the Empire State and Chrysler buildings taking a large tonnage of this material. Others have taken considerable 18-8 as inside and partial exterior trims, but not in as large volume as the two named above and the planned Insurance Company of North America building, foundations for which are already under way.

Bulletins Outline Research Work on Steel

The Kaiser Wilhelm Institute for Iron and Steel Research, Dusseldorf, Germany, has issued the thirteenth annual volume containing bulletins covering research work done at the institute. The volume contains 24 bulletins, discussing among others the following subject: Large-grain recrystallization of cold-drawn seamless tubes of mild steel; research on forces in extruding and piercing; workability of killed and of effervescing steels; fatigue tests on steel wire; the iron-chromium-nickel system; the iron-chromium system; high-frequency induction furnaces; influences of alloying elements on the polymorphous changes of iron; reduction of chromium oxide and the production of chromium-iron alloys of low carbon content; water cooled ingot molds for steel; determination of oxygen in steel by hot extraction; influence of lubricant upon the force necessary for drawing steel wire through Krupp tungsten carbide dies; changes of composition of basic steel in the ladle; and several others.



MAKING THE MOST OF STEEL

A LARGE manufacturing plant operating its boilers under a pressure of 1200 pounds per square inch observed that valves on its duplex boiler feed pumps had a comparatively short life. Records showed that after 500 hours of operation it was necessary to replace the valves because of deep cuts on the seats. Therefore, it was decided to hard face the wearing surfaces of the valves and seats. These seats, approximately 2 inches in diameter, ¼-inch thick and made in two sections were covered with a thin layer of stellite by means of the oxyacetylene welding process and ground to shape. These hard faced valves operated 5000 hours before it became necessary to rebuild them. After this period, building up was necessary, not because of cuts on the valve seats, but because the constant hammering tended to mushroom the metal that formed the base for the hard-faced disk seat. A study of this situation revealed that use of a harder and tougher base metal and a thicker deposit of hard facing material would remedy the difficulty so that the hard surfaced seats would increase their life ratio over steel by even more than 10 to 1.

A TRACTOR manufacturer in rearranging its plant some time ago abandoned a centralized heat treating department in favor of decentralized units, thus achieving integral and complete group systems in many of its departments. The company found that by proper selection of furnace equipment, with due consideration for cleanliness, simplicity, economy and accuracy of results, heat treating units could be placed directly in line with machine tools and operations with a real improvement in the economy of manufacture and quality of product. Furnaces may be regarded as "heat treating machines;" the human factor is submerged and it is therefore possible to apply wage incentives or group bonuses figured on a basis of the number of finished parts that are produced.

$ $ $

Because of the stiffness of 18-8 chrome - nickel corrosion - resisting steel, a workman can produce by spinning scarcely one-quarter the number of pieces he could if spinning the same gage of deep drawing steel stock.

$ $ $

The photoelectric eye can be made to control the temperature of a weld. This scheme now is in operation on a link welding machine in the plant of a chain manufacturer.

$ $ $

Transportation of fuel through pipelines is likely to be developed in a much larger way. Recently powdered coal was transported through one such line at a speed of 90 miles per hour; air was the carrier, about 10,000 cubic feet being required to move a ton of the pulverized fuel.

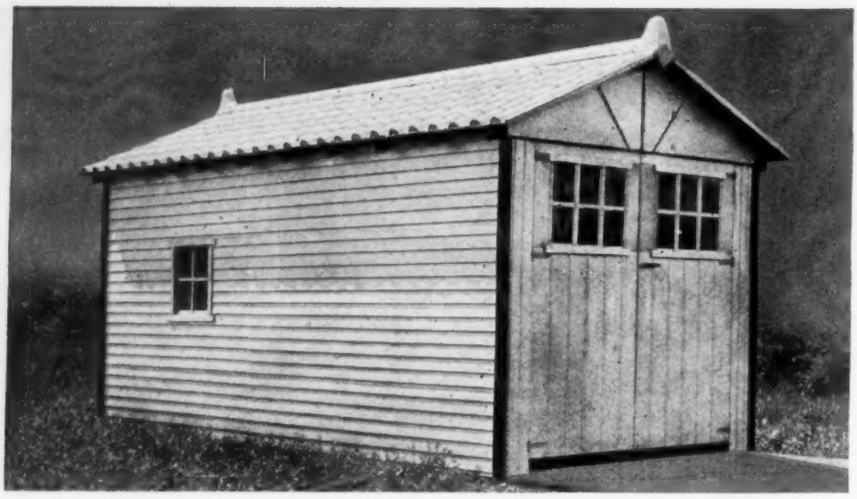
$ $ $

Cost of the nitriding process is being reduced. An electric furnace installed in a Midwest plant and in operation for over nine months turns out approximately 710 pounds of material every two days, obtaining a case depth of from 0.015 to 0.018 inch and a hardness of 1000 Vickers-brinell, with the entire cost of operation, including power, ammonia, labor and all other items well under 2 cents per pound.

$ $ $

Honing, or expansive grinding as it is sometimes termed, is well adapted to accurate finishing of comparatively long lengths of tubing. For example, large guns, such as naval and coast defense units can be finished by honing in a fraction of the time required for other methods. Given a true bore to start, such as a hole finished by reaming, honing can be relied upon to remove irregularities that otherwise would produce excessive wear. A honed hole presents a dead-smooth surface which results in maximum wear resistance.

HIGH-SPEED resistance spot welders now are in operation with which it is unnecessary to use a heavy current mechanical contactor to break the current. In this scheme, which applies to the alternating-current spot welder, a series transformer is connected in the welding transformer circuit. By saturating the core of this transformer with direct-current power derived from thyratron tubes, the power delivered to the welding transformer can be cut off or allowed to flow intermittently at very high speeds. The control of the thyratron tubes is through the low-current grid circuits in which small high-speed mechanical interrupters can be applied successfully.



Small steel garages in recent years have required 19,000 tons of steel annually. This garage is erected in sections. The "tile" roof is made of No. 28 gage galvanized sheets

Large Uses of Steel In Small Ways

216th Article ◆ Portable Garages

INDIRECTLY the automobile has accounted for a large consumption of steel products, servicing and housing facilities requiring a fairly heavy tonnage, in addition to the huge volume used in the manufacture of motor vehicles. The tendency toward increased use of steel in building construction recently has been particularly noticeable in the erection of garages, principally because of the fire hazard. Repair and large parking garages naturally have adopted fireproof construction, and a similar type is favored in the building of private garages.

In some of the larger cities erection of inflamable structures is prohibited in certain sections while some municipalities make the use of fireproof garages mandatory in all districts. Steel is a favorite material used in meeting this specification.

A popular, low-price steel garage is shown in the accompanying illustration. This structure is made up in various sections, requiring only a hammer, screw driver and small punch for its erection, and can be taken apart into small units for shipping and re-erection. It is estimated that the building of small steel garages in recent years has required approximately 10,000 tons of steel annually. Galvanized steel sheets represent the principal steel product consumed, although several hundred tons of steel angles are used for framework in the all-steel type of garage.

Wall and roof sections are made of No. 24 gage galvanized sheets. Wall sections usually are in vertical panels 2 feet wide. The roof of the garage illustrated also differs in roof construction from the general style in that it employs an imitation tile made of No. 28 gage galvanized steel sheets, instead of flat, vertical panels. Special ridge caps of steel construction act as ventilators for carrying off fumes from the garage. Steel also is used for window sash and frames.

In the combination wood and steel construction, trusses and wall frames are made of wood, with angles used in the all-steel type. Trusses are supported and fastened to the frame of the walls by heavy galvanized truss hangers. Other steel parts include door hinges, handles and bolts.

British Steel Institute Announces Its Program

The Bessemer gold medal of the British Iron and Steel institute will be awarded to Prof. Henry Louis at the annual meeting of the organization to be held in the Institution of Civil Engineers, London, May 5-6. At the same time the Williams prize is to be given to Arthur Robinson, of Scunthorpe.

Technical papers to be read at the meeting are announced as follows:

"Fourth Report on the Heterogeneity of Steel Ingots," by a joint committee of the Iron and Steel institute and National Federation of Iron and Steel Manufacturers.

"Action of Sea Water on Mild Steel," by G. D. Bengough and A. R. Lee.

"The Lattice Spacings of Iron-Aluminum Alloys," by A. J. Bradley and A. H. Jay.

"Blast Furnace Engineering," by W. R. Brown.

"Properties of Some Silico-Manganese Steels," by G. Burns.

"The Austenite-Pearlite Inversion," by H. C. H. Carpenter and J. M. Robertson.

"Theory and Practice of Nitrogen Case Hardening," by A. Fry.

"Some Experiments on the Nitrogen Hardening of Cast Iron," by J. E. Hurst.

"Heterogeneity of a Sand-Cast Steel Ingot," by A. Kriz.

"Determination of the Porosity of Tin Coatings on Steel," by D. J. Macnaughton, S. G. Clarke and J. C. Prytherch.

"Behavior of Manganese in the Acid Open-Hearth Process," by E. Maurer and W. Bishof.

"Influence of the More Common Elements in Inhibiting Needles in Nitrogen-Rich Steels and Arc Welds," by L. W. Schuster.

"Recent Improvements in the Greenawalt Sintering Apparatus," by J. Tornblad.

Liquid Oil Soap Is Used For Ball Burnishing

One of the products of the White & Bagley Co., 100 Foster street, Worcester, Mass., is a liquid oil soap for ball burnishing. According to the manufacturer, this soap dissolves quickly, will not pit or eat into the burnishing balls or the articles themselves and is readily washed off leaving no trace of soap on the articles when they are put into plating tanks or barrels.

Bethlehem Orders Another Tin Plate Normalizer

Bethlehem Steel Co., has purchased from the Surface Combustion Corp., Toledo, O., another tinplate normalizing furnace for installation in its plant at Sparrows Point, Md. The furnace is of the walking-beam continuous type and will be equipped with high-pressure automatic proportioning burners and standard Surface Combustion hydraulic driving mechanism.

Controlled cooling and over and under firing are two of the outstanding features of the furnace. The water-cooled and air-cooled chambers in the cooling zone control the grain growth of normalized packs by maintaining the temperature of the packs through definite time limits. Over and under firing insures uniform heating of the packs as they pass through the heating zone.

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Titanium - Treated Open Hearth Steel Castings show a finer structure than those from untreated steel, when annealed in the same manner. A small percentage of Ferro Carbon Titanium added to the ladle also yields a cleaner, smoother and more uniform surface. You can test this by using a bifurcated or Y-spout – tapping steel into two ladles and adding Ferro Carbon Titanium to one of the ladles... Titanium Engineers will gladly help you improve your product. Write today.

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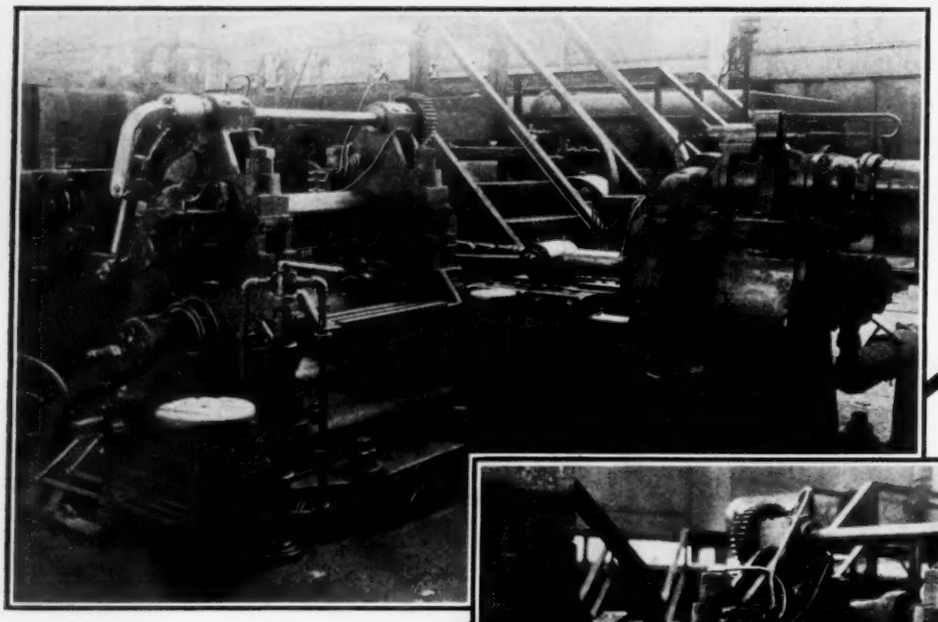
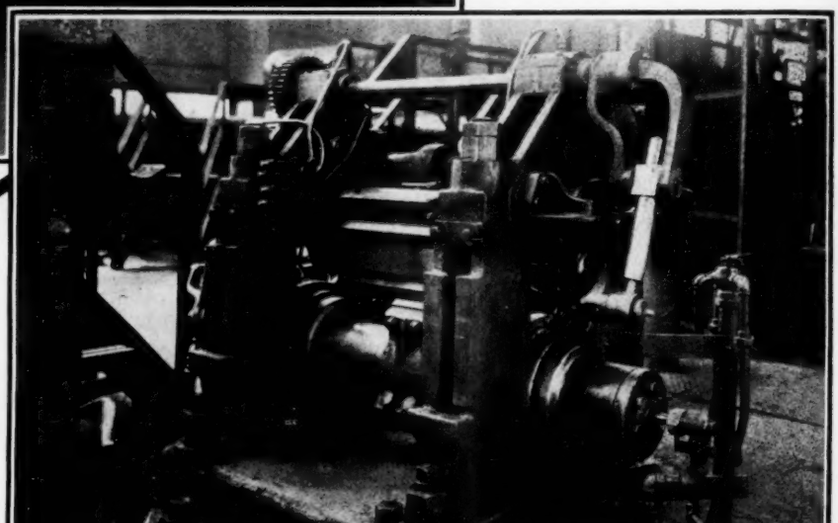


Either Steam, Air or Electrically Driven



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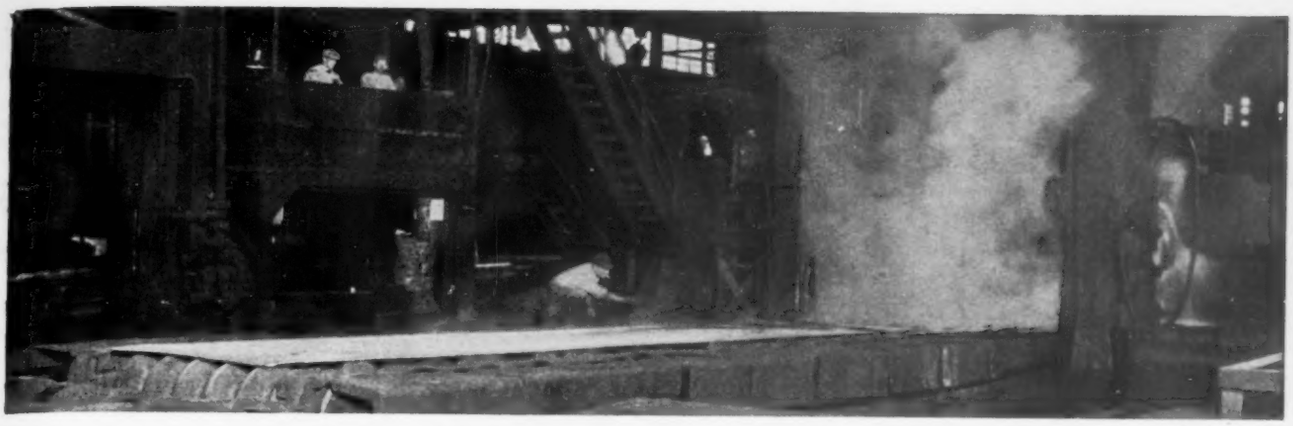
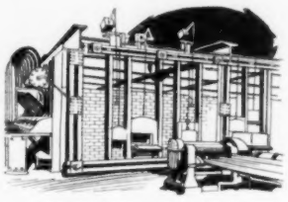


PROGRESS IN STEELMAKING

SHAKING unsolidified ingots to eliminate gases in the steel and to confine segregation at the top of the ingot is being practiced by an Ohio steelmaker. As a result of this recent development in pouring practice, the plant has effected a 40 per cent reduction in the quantity of pit scrap produced and has lowered chipping costs materially.



LOWER maintenance costs of furnace hearths, more uniform heating of the underside of billets and increased production have been realized by a steel producer by substituting chrome plastic for brick in the hearth of billet reheating furnaces. The plastic is burned to a hard mass by firing the furnace while empty.

♦ ♦ ♦

Field data disclose that blast furnace stoves built to operate with gas of uniform velocity and turbulent flow function efficiently and with low maintenance when the cleanliness of the gas is about 0.02-grain of dust per cubic foot.

♦ ♦ ♦

Two Ohio sheetmakers now are shipping high-grade sheets to an automobile body consumer in strapped bundles 20 inches high and weighing from 15,000 to 16,000 pounds. The steel is placed on two 2 x 4-inch wooden skids running lengthwise to permit the bundle to shift in transit. Three straps, 2 inches wide and 0.050-inch thick, are placed around the bundle crosswise and then the steel is strapped lengthwise over the wooden skids. The bundle then is wrapped with waterproof paper and loaded by crane into gondola cars. By this arrangement the amount of handling and rejections are reduced.

♦ ♦ ♦

Installation of a rotary flying shear between the last finishing stand and the hot bed of a merchant mill for the purpose of cutting the shapes to cooling bed lengths and test pieces from the ends of the bar, is a recent development. Cutting test pieces at this point in the mill layout no longer necessitates the roller going to the cooling bed to gage the bar.

♦ ♦ ♦

Nickel-clad steel now is being rolled by an Eastern platemaker. The thickness of the nickel on the finished plate is varied by altering the proportionate thickness of the element to the steel before rolling. Present practice involves a coating equal to 10 per cent of the thickness of the base metal which is ¼-inch and heavier.

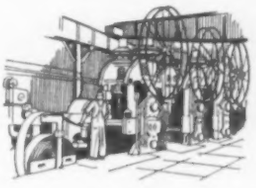
PROPER relation of height to the cross sectional area of an ingot mold, is contingent upon the grade of steel, according to a mold manufacturer who states that the higher the quality of ingot, the shorter the mold should be made.

♦ ♦ ♦

Wooden roll neck bearings, made of lignum vitae and known as "millwright" bearings, are being lubricated at many rolling mills by water sprays. The rate of wear and the power losses are lower than bearings lubricated with grease. Lignum-vitae bearings have served for 13 months without replacement on certain finishing stands of a mill in the Chicago district.

♦ ♦ ♦

Belted hot saws require about 40 to 45 per cent more power to cut structural sections than does the direct motor-driven type saw, according to tests conducted at a plant in the Pittsburgh district.



BY adjusting the generator voltage a 4-high cold-strip mill at a plant in Cleveland automatically is slowed down to a predetermined speed to facilitate threading the strip through the rolls, and then speeded up to the normal operating rate.

♦ ♦ ♦

Six hydroelectric devices for obtaining a straight-line motion, commercially known as thrustors, and each designed for a 4000-pound thrust through an 18-inch stroke, are being installed at a plant in the Pittsburgh district for operating the doors of a billet reheating furnace.

♦ ♦ ♦

A method of making glass from blast furnace slag has been worked out in both small and large-scale laboratory apparatus, yielding a transparent light-green or almost colorless glass suitable for bottles and jars, corrosion-resistant kettle linings, structural and decorative purposes, x-ray bulbs, goggles, etc. The mix contains 7 parts granulated slag, 8 parts sand, 1.76 parts soda ash and 5 parts hydrated sodium sulphate per 40 parts of the mix.

New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Develops New Series Open Side Forming Machines

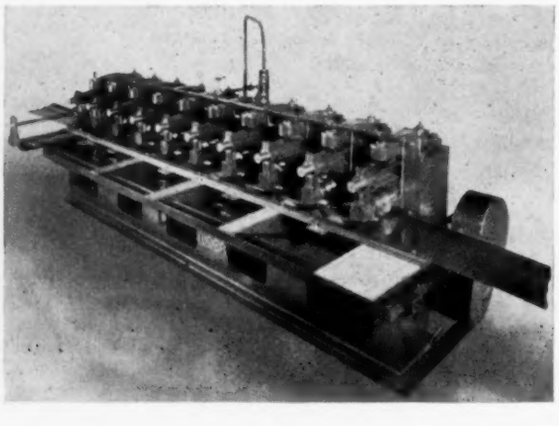
Yoder Co., 5500 Walworth avenue, Cleveland, in response to a constant demand for a cold roll forming machine with ease of access to the roller dies, quick changing possibilities, compact construction and silent operation, has brought out its new OW series. Worm and spur gears are completely encased and run in oil. A V-belt drive is employed, provision being made for enclosing the motor in the base of the machine, as shown in the accompanying illustration, to conserve floor space. The motor also may be attached to the end of the machine or direct connected to the worm drive shaft.

In the new open side series, each unit is furnished with a roll irrigating device which completely and automatically flushes all the rolls and contact points. A separate motor is used and the flushing compound is collected in a reservoir welded inside of the base. Ample lubrication facilities are provided for all bearings.

The electric control box is equipped not only with the usual starting, stopping and reversing buttons but also with an "inching" button which permits the operator to propel the first piece of material through the machine an inch at a time while the rolls are being adjusted to their proper position. Moreover, the pushbutton control box is mounted on a swinging conduit bracket moveable to within easy reach of the operator from whatever position he may take in attending the machine.

On the usual cantilever shaft type of machine and also in units where the rolls are mounted on the outside of the housings, the apparent weaknesses are the difficulty of getting proper adjustment of roll pressure, and the tendency of shaft deflection at the bearings due to concentration of stress at that point. The Yoder company claims to have completely eliminated these difficulties by installing bearings at the end of the shafts outside the forming rolls. These bearings are kept in alignment with the others by the use of a rigid bearing arm, irrespective of roll adjustment. Roll pressure is maintained by means of a rigid backup support provided with an adjustment screw located immediately over the mid-line of the forming rolls, thus equalizing the pressure on the bearings on each side of the forming rolls. The roller bearings and their support at the outer end of roll shafts are quickly detachable, thus permitting speedy roll changes.

Ample latitude of the adjustment of guide rails is provided so as to accommodate the working of material of unusual width. Between the roll forming dies these machines are equipped with benches on which are securely attached the intermediate guiding supporting and holding-down devices.

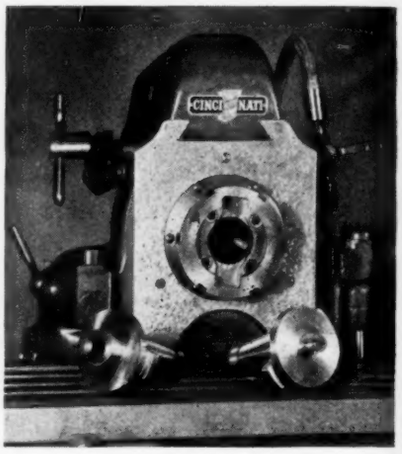


THIS open side type cold roll forming machine designed by Yoder Co. has many features, several of which are ease of access to the roller dies, quick changing facilities, compact construction and silent operation. The machines are identified as the OW series

Introduces Quick-Change Collets and Arbors

Cincinnati Milling Machine Co., Cincinnati, has announced a new line of quick-change collets and shell end mill arbors to be used with its new quick-change adapter, as shown in accompanying illustration. The adapter is mounted easily and quickly on the nose of any milling machine having a 5 1/16-inch diameter standard spindle nose with the national standard taper hole (3½-inch taper per foot).

The collet or arbor is inserted in the adapter until its taper fits snugly into the taper hole of the milling machine spindle. One-fourth turn of the nut "A" in a clockwise direction



Cincinnati quick-change collets and arbors are inserted in adapter

locks the collet securely in place. The time required to remove a quick change collet and replace with another collet is but one-third of a minute.

This new arrangement is particularly valuable in reducing idle time, it being possible to perform a variety of operations such as drilling boring, end milling, face milling or shell end milling on a piece of work with but one setting of work.

Quick-change shell end mill arbors are available for shell end mills having national standard diameters of 1¼, 1½, 1¾, 2, 2¼, 2½, 2¾, 3, 3½, 4, 4½, 5, 5½, and 6 inches. The collets are offered with No. 7 B & S, No. 9 B & S, No. 10 B & S, No. 11 B & S, No. 2 Morse, No. 3 Morse and No. 4 Morse tapers, either plain drive or tang drive. A draw-in bolt is supplied for use with collets having plain drive.

Unit Employs Gyroeccentric Crushing Action

Patterson Foundry & Machine Co., East Liverpool, O., has introduced a gyroeccentric crusher for reducing

Sure... if you can get a Shepard *for that price*

YOU don't need to accept a hoist less fine than a Shepard, even though purse-strings are held tighter these days. There is no price premium attached to the better performance of a Shepard Electric Hoist. With all its exclusive features and reputation for quality, a Shepard will cost no more than an average hoist.

This is possible because of mass production methods, which Shepard can apply to a degree unapproached by any other hoist builder. Shepard "unit construction" is particularly adaptable to quantity production. And, in addition, Shepard sells nearly as many hoists as all of the other manufacturers combined.

Shepard "unit construction" also makes it possible to build economically the most comprehensive line of types and sizes. You can always obtain a Shepard hoist exactly suited to service conditions.

When you are considering hoists—don't fail to get the proof that you pay *no price premium for the better performance of a Shepard.* The coupon brings the facts, or if you prefer, an informative booklet on Shepard Hoists.

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1. *Balanced Drive, at two points diametrically opposite*
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3. *Automatic Oil Bath Lubrication*
4. *Controlled by rope, push button or outrig for every hoist*
5. *Precision variable speed control for both A.C. and D.C.*
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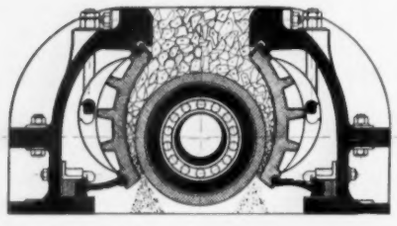
such materials as ore, anthracite, rock, gravel, hard shale, silica, cement, mixed concrete, grog, etc. The unit embodies a novel principle by which a manganese roll through gyroeccentric motion operates against two crushing plates. Two crushing strokes take place at each revolution.

As shown in the accompanying illustration, the mechanism consists essentially of but three major parts, a case or frame, the concave crusher plates and the crusher roll. The roll



Crusher designed by Patterson Foundry & Machine Co. has novel action

which is the only moving part of the entire assembly has a manganese steel shell which does not revolve with the shaft but creeps slowly so that wear is distributed evenly over its entire circumference.

A revolving eccentric shaft imparts a gyroeccentric motion to this roll. The material flows down and is crushed on both sides of the roll. Crusher plates are reversible in order to compensate for wear, and safety breaker plates guard against any serious damage when tramp iron or other foreign materials lodge in the crushing chamber. Corrugated roll and crusher plates can be furnished for handling "slabby" materials.

◆

Designs D. C. Motors for Vertical Operation

Century Electric Co., St. Louis, recently introduced a line of direct-current motors for vertical operation.

Left—Century direct-current motor for vertical operation, designated type R

The units, designated type R, one of which is shown herewith, are ball bearing, grease-lubricated and can be mounted on a ring base or directly on the driven equipment as required. The top bearing bracket is protected with a cover and may be furnished with open or with screen or solid covers to meet surrounding conditions. The motors are built in sizes from 1 to 150 horsepower.

◆

Develops Brush for Heavy Duty Application

National Carbon Co. Inc., carbon sales division, Cleveland, recently announced a new electrographitic brush, the characteristic of which is a nonresilent structure, a property which enables the brush to maintain exceptionally firm contact on commutators of high peripheral speed. It is asserted that excellent commutation, low friction and high carrying capacity combine with the smooth riding properties of this new grade to minimize brush wear and commutator maintenance. The field of application of this new grade as stated in the announcement is for heavy-duty direct-current generating and substation equipment.

◆

Roller Bearings Have Large Radial Capacity

Bantam Ball Bearing Co., South Bend, Ind., recently developed radial roller bearings having a full complement of rollers, in the standard ball bearing metric sizes which allow complete interchangeability. These bearings, shown herewith, have two lips on the inner ring or cone, and one lip on the outer ring or cup, which permit this type of bearing to take thrust loads in one direction.

Due to their large radial capacity, this type is particularly adaptable to application where the design will not lend itself to a larger bearing and where a larger load capacity than that of a conventional bearing is desirable, such as motors, machine tools, pumps, and speed reducers.

High carbon alloy steel is used for both the races and rollers. Size and runout tolerances are the same as for a ball bearing of equivalent size.

Right—Disassembled view of radial roller bearings developed by Bantam Ball Bearing Co.

◆

Force Feed Lubricator Is Automatic

Manzel Bros. Co., Buffalo, recently placed on the market a new automatic force feed lubricator, Model 25, for automatically lubricating the bearings of industrial machinery. With this system there is an independent oil line to each joint to be lubricated, each bearing receiving the proper amount of oil.

The lubricator, shown in the accompanying illustration, is placed on the frame of the machine on which it

Automatic force feed lubricator introduced by Manzel Bros. Co.

is to be used and is connected to some movable part, either by reciprocating or rotary motion. An oil line runs to each bearing, the feed being adjusted according to the amount of oil required by the particular bearing lubricated.

A suitable size and style of lubricator is built for practically every type of machine. They can be supplied with from one to 30 feeds, with either rotary or ratchet drive and with different reservoir capacities.

Steel Rate and Sentiment Higher

Tonnage Producing Districts Stronger—Industry Believes Downtrend in Demand Is Halted—Finished Material Prices Firm, Raw Materials Easy

A RISE of one point in the steelmaking rate to 24 per cent, highest since the third week of March, has exhausted the potentialities of recent automotive buying, chiefly by Ford, but in spite of staggered operations at Buffalo and depletion of orders which enabled Birmingham mills to resume on a large scale April 18, the industry may hold this gain this week.

It may be significant that the heavy tonnage districts are the least volatile. Chicago, after dipping under 20 per cent for several weeks, has regained that level and may cross it this week. Pittsburgh is steady at 22 per cent. Youngstown, up two points last week to 28 per cent, may average 30 this week. The underlying sentiment is that May will close stronger than it opened.

Some support for this position flows from observations of steel executives in connection with first quarter financial reports. Bethlehem's president has epitomized sentiment in concluding that the stationary character of demand the past six weeks denotes that the downward trend has been checked. National Steel and Youngstown Sheet & Tube are now operating higher than their average for the first quarter. The resistance of production to breaking through 22 per cent on several occasions is encouraging.

Stability of finished steel prices to the general trade is noteworthy. True, prices have not been put to any tonnage tests but their application to going business is impressive. Stove bolts have been advanced 10 per cent; Chicago warehouses have put all bolts and nuts up 5 per cent. In contrast, raw materials are softer. Pig iron in the Mahoning valley and in eastern Pennsylvania is weaker, by-product coke is off 25 to 50 cents in New England, Philadelphia, Cincinnati and Newark, N. J., while foreign manganiferous and iron ores have been reduced at Atlantic ports.

Award of 5500 tons for the Insurance Co. of North America building in New York brings structural awards for the past week up to 15,335 tons, which is above the average for the year to date. Eastern fabricators look for a rally late in May when upward of 100,000 tons is scheduled to be closed.

A natural gas line, requiring steel pipe, from Hugoton, Kans., to St. Louis is projected by the St. Louis Industrial Gas Co. Passaic, N. J., closes May 3 on 2400 tons of steel pipe. Los Angeles has placed 5025 tons of cast pipe.

Illinois Central railroad has divided 4000 tons of rails between the Illinois and Inland Steel Cos. Nearby action on 10,000 tons of rails is expected by Chicago mills. Demand for track fastenings continues to exceed that for rails.

While spread thinly, automobile requirements are more of a factor in the northern Ohio and Pittsburgh districts. May assemblies are forecast at 150,000, compared with a monthly average of 125,000 thus far in 1932. Chevrolet, Plymouth and Ford are the principal buyers. Ford continues to place ferroalloys. Die and forge shops at Chicago report better demand from automotive outlets. Lower lake blast furnaces also are receiving broader releases from automotive foundries.

Russia is again an active inquirer for lathes, milling machines and other machine tools, but on terms involving no payment until 6 months after shipment and then only 25 per cent. In New England, the soviet has placed some grinding equipment.

Reductions in pig iron in eastern Pennsylvania and at Pittsburgh have pulled STEEL's iron and steel composite down 4 cents this week to $29.70. While scrap dealers are less panicky than a week ago, prices have softened sufficiently to drop the scrap composite 16 cents to $7.54. Reflecting firmness in mill products, the finished steel composite stands at $47.62.

Composite Market Averages

	April 30	April 23	One Month Ago March, 1932	Three Month Ago Jan., 1932	One Year Ago April, 1931	Ten Years Ago April, 1922
Iron and Steel Composite	$29.70	$29.74	$29.61	$29.98	$31.59	$34.42
Finished Steel Composite	47.62	47.62	47.09	47.28	49.22	51.04
Steelworks Scrap Composite	7.54	7.70	7.94	8.03	10.12	13.65

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 30, 1932	March, 1932	Jan., 1932	April, 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.26	16.76	17.26	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	15.00	15.75	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.26	16.51	17.26	18.26
No. 2 foundry, Chicago	16.00	16.50	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.26	15.76	15.76	18.26
Malleable, valley	15.50	15.50	16.00	17.00
Malleable, Chicago	16.00	16.50	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	22.29	27.04
Gray forge, del. Pittsburgh	15.63	16.13	16.63	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	79.85½	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.25	2.25	2.25	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	27.50	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	27.50	30.00
Wire rods, Pittsburgh	37.00	37.00	37.00	36.00

	April 30, 1932	March, 1932	Jan., 1932	April, 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.55	1.55	1.65
Steel bars, Chicago	1.70	1.70	1.70	1.80
Steel bars, Philadelphia	1.91	1.83	1.81	1.96
Iron bars, Chicago	1.70	1.70	1.60	1.80
Shapes, Pittsburgh	1.60	1.55	1.55	1.65
Shapes, Philadelphia	1.75	1.65	1.65	1.78
Shapes, Chicago	1.70	1.70	1.70	1.80
Tank plates, Pittsburgh	1.60	1.55	1.55	1.65
Tank plates, Philadelphia	1.79½	1.69½	1.69½	1.88½
Tank plates, Chicago	1.70	1.70	1.70	1.80
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.75	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.25
Sheets, No. 24, galvan., Pitts.	2.85	2.80	2.80	2.85
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.45	2.45
Sheets, No. 24 galvan., Chi.	3.00	3.00	2.95	3.00
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.00	10.25	10.25	12.50
Heavy melting steel, eastern Pa.	7.00	7.35	7.50	10.00
Heavy melting steel, Chicago	6.50	6.75	7.25	9.60
No. 1 wrought, eastern Pa.	7.75	9.00	9.35	11.00
No. 1 wrought, Chicago	5.50	6.25	7.25	8.80
Rails for rolling, Chicago	8.50	9.50	10.30	11.85

Sheets

Moderate Improvement in Automotive Orders—Mill Operations Steady—Prices Are Holding

SHEET PRICES, PAGE 53

Youngstown, O.—Sheet mills are continuing to operate at unchanged rates, with prospect for continuation at present rates for another week. A considerable portion of specifications have come from miscellaneous sources. Ford Motor Co. evidently has spread its sheet orders over a wide range of mills, mainly the smaller interests. It now appears some models will retain the old type of fenders; hence Ford was able advantageously to pick up from one local mill 400 tons of sheets that had been rolled for the old Ford, and also some odd lots from some northern Ohio mills. All sheet prices are firm. If recent automotive purchases have been placed at even the old-time quantity concessions, these have not appeared in the general market.

New York—An Ampere, N. J., concrete pipe maker is inquiring tentatively for a fair tonnage of sheets. The market otherwise is quiet, with prices steady.

Philadelphia—One radio manufacturer is specifying more freely, but the market for sheets generally is slow. A large sheet metal plant has suspended all operations for an indefinite period. Morris, Wheeler & Co., Philadelphia, have been awarded 132,900 pounds of pickled and oiled steel sheets, 0.025-inch thick, for the navy, Mare Island, Calif., at $4031.85, works. Erie, Pa., has placed 5000 feet of large galvanized culvert pipe with the Wheeling Corrugated Pipe Co., Wheeling, W. Va.

Buffalo—A fair demand for automotive sheets for quick shipment has resulted in some mills here which have been idle for many months going into production.

Pittsburgh—Sheet orders are in steady volume, business still lacking a definite upward trend. Mills are receiving only small lots of automotive orders and so far have benefited but slightly as a result of better operations of the Ford Motor Co. Requirements of most other leading sheet consumers are unchanged, with electrical refrigerator manufacturers still operating at a relatively high rate. Prices generally are steady and are being maintained in the Detroit district more firmly than was true during the first quarter. Quotations generally are 2.20c, Pittsburgh, for hot-rolled annealed sheets; 2.85c for galvanized; and 1.55c for heavy hot-rolled.

Cleveland—Sheet demand holds at the minimums which has prevailed for the past six or eight weeks. A smaller volume of automobile parts orders is coming into this territory, though two plants here have divided a running board order for a Detroit automobile builder. The Chevrolet body plant here is working one shift daily in its press rooms, but maintains its steady flow of sheet releases through Detroit. Barrel, culvert and steel furniture outlets still are lagging. Prices are fairly firm at 2.20c, Pittsburgh, for black; 2.85c for galvanized; and 2.80c to 2.90c for autobody.

Cincinnati—Sheet mill schedules are well maintained, with some help from road construction and roofing orders. Only moderate improvement is noted in automotive releases.

Chicago—Orders for sheet roofing products in the South and Southwest are tapering. Demand from small container manufacturers holds up, chiefly for black sheets. Mill operations in the past week exceeded 25 per cent, production being on full turns. No. 24 hot-rolled annealed sheets are unchanged at 2.30c, Gary and Indiana Harbor.

St. Louis—Some improvement is noted in automotive requirements and in demand for roofing material. Refrigerator companies are purchasing moderately.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
*Gary, Ind. Harbor, base	2.35c
*Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
*Gary, Ind. Harbor, base	2.85c
*Chicago, del.	2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chi., billet	1.65c to 1.75c
Chi., rail steel	1.55c to 1.60c
Chi., rail steel, road, bridge and culvert	1.55c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10 Cr.	0.45
2100	0.55		
2300	1.50	51.00 Cr. spring	0.20
2500	2.25		
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)	0.25
		9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
Hot strip to 6 in. Chi.	1.60c to 1.70c
Do, 6 1/16 to 24-in.	1.50c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
*Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Better Demand Developing but Mills Hold Low Rate—Prices Steady in Absence of Test

BAR PRICES, PAGE 53

Chicago—Bar orders show more vigor because of a shade heavier demand from die and forge shops for automotive parts, and a few more automobile plant releases. Farm equipment makers are obliged to maintain some departmental operations because of growing replacement orders. Implement and tractor sales from plant stocks are exceeding earlier expectations. Plans are for autumn production schedules at several works. A few implement plants are expecting a $1 wheat market by fall. Soft steel bar prices are 1.70c, Chicago, in the absence of lower outside competition. An eastern finished steel producer has started the usual season's boat shipments with a cargo just received from Buffalo for the Chicago-Milwaukee area. Bar mill operations are holding at 25 per cent.

Boston—Midvale Co. is low on 160 tons of round hot rolled steel bars, grade V, 1⅛ and 1-inch for the Boston navy yard, Charlestown, Mass., with $13,571.88. Material is for the manufacture of die lock chain. Bidding was steady and uniform, six of the nine bidding $13,835.10.

Philadelphia—In spite of dullness and lack of interest on the part of consumers steel bar prices remain firm.

Republic Steel Corp. has booked 55 tons medium round bar rivet steel, ⅝ and ¾-inch diameter for the Norfolk navy yard at $2227 delivered.

Pittsburgh—Steel bar demand holds at its recent quiet rate, automotive releases being light and requirements of miscellaneous consumers failing to improve. A similar situation prevails in the alloy bar market. Bars are holding at 1.60c, Pittsburgh.

Youngstown, O.—A slight expansion in volume of new buying of common steel bars is noted, some from automotive partsmakers. There is also a revival of miscellaneous bar buying. Alloy steel barmakers feel some quickening from auto partsmakers. Common steel bars are 1.60c, Pittsburgh.

Cleveland—Soft steel bar specifications are purely routine and no inquiry of importance is before the market. An automotive concern near here has decreased its bar orders somewhat, due to a revised credit situation. Bolt and nut makers and the general trade have not shown desire to take more than their immediate requirements. On light trading 1.65c, Cleveland base, holds.

Tin Plate Operations Hold Above 50 Per Cent

Tin Plate Prices, Page 53

Pittsburgh—Tin plate activity is holding its recent gain and operations are maintained at slightly above 50 per cent. Specifications are steady in seasonally low volume. Although part of recent production has been for stock, improved operations of canmakers is looked for over the next few months. Tin plate holds at $4.75, Pittsburgh, per base box.

Youngstown, O. — While tin plate continues to be ordered cautiously by canning interests, new business from automobile partsmakers and miscellaneous manufacturing lines enable valley mills to maintain operations at 50 per cent. This appears likely to continue well into next month.

Cold-Finished Buying Finds Little Impetus

Cold Finished Prices, Page 53

Pittsburgh—Improved operations of some automotive interests have found only slight reflection in cold-finished bar activity. April shipments and incoming business held at about the March rate and the near future outlook offers slight encouragement. The market continues 2.00c, Pittsburgh, and although some reports are heard of a probable advance no definite action has been taken.

Cleveland—Orders of consequence still fail to make an appearance in the market, and cold-finished steel bar releases are almost entirely for small-sized lots. The base price of 2.00c, Cleveland, is observed.

Plates

Chicago Mills Bidding for Hoover Dam Tonnage—Tank and Barge Awards Continue Slow

PLATE PRICES, PAGE 53

Chicago—Plate mills in this area will seek a part of the 50,000 to 60,000 tons for outlet pipes, branch connections and manifolds for the Hoover dam, Boulder, Nev., but bids will not close until June 15. Plate mills again were down for a part of the last week. Small tank makers are getting scattered business. The plate base is 1.70c, Chicago.

Philadelphia — Platemakers are figuring on 2000 tons for a 36-inch pipe line at Tamaqua, Pa., although cast may be used. A municipal tank for Lititz, Pa., requires 100 tons. Worth Steel Co., Claymont, Del., has been awarded approximately 65 tons of marine boiler plate steel for the Puget sound navy yard, Seattle, at $5083.80, delivered.

Pittsburgh — Except for several prospective barge orders little improvement in fabricated plate awards is looked for shortly. Awards of river craft so far have been lacking and no new inquiry has appeared recently. Plate orders are quiet and unchanged, with the market quoted 1.60c, Pittsburgh.

Cleveland—Desirable orders fail to appear to bolster a continued flow of small lots. The Toledo, O., pipe line to be of welded plate construction, has not as yet taken form and tonnage is unestimated. Awards on both the Cleveland and East Cleveland, O., tanks are being held up. The local 84-inch plate mill ran for a time last week but the 112 and 154-inch mills were down. The price holds at 1.60c, Pittsburgh.

Contracts Placed

535 tons, black medium hull plates, navy, Norfolk, Va., all but about 50 tons to Central Iron & Steel Co., Harrisburg, Pa. at $17,798.08. Youngstown Sheet & Tube Co. awarded 35 tons at 2.12c and 2.07c, delivered. American Rolling Mill Co. awarded 16 tons at 2.12c, delivered.

180 tons, penstocks, Wippel plant, Kittitas, Wash., reclamation project, to Beall Pipe & Tank Corp., Portland, Oreg.

100 tons, water tank, Somers, N. Y.; to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

2500 tons, bulkhead frames and gates, Hoover dam, Boulder City, Nev.;

bids May 2.
2000 tons, 36-inch water line Panther Valley Water Co., Tamaqua, Pa.; cast pipe figured as alternative.
275 tons, 2,000,000-gallon tank, Cleveland; McClintic-Marshall Corp., Bethlehem, Pa., low.
Unstated tonnage, oil refinery, for Argentina; contract to American Locomotive Co., Dunkirk, N. Y.

Semifinished Shipments To Detroit Resumed

Semifinished Prices, Page 60

Pittsburgh — Semifinished steel shipments continue quiet as result of lack of improvement in operations of most finishing mills. April orders showed little change from March volume. Demand for forging billets is slow but slightly more active at some points. Forging billets usually are $33 to $34 with rerolling material continuing $26 to $27.

Youngstown, O.—Releases of automotive orders for sheets, strip and bars have not affected the semifinished market here appreciably. Limited tonnages of sheet bars are moving to nonintegrated mills; and less often, small lots of billets to stripmakers. Billets are $27, Youngstown, Pittsburgh and Cleveland; sheet bars, $26, Youngstown and Cleveland, and $26 to $27, Pittsburgh.

Chicago—Shipments of sheet bars to the Detroit area are being resumed. Little demand exists for billets and blooms. Forging billets are quoted $34 to $35, Chicago.

Foreign Manganese and Iron Ores Easier

Iron Ore Prices, Page 60

New York—While Caucasian and South African manganese ore prices continue officially unchanged, indications point to weakness. Trading is so light, that a fair appraisal of the market is difficult. Much the same situation prevails in Indian and Brazilian manganese ores, the latter being offered down to 18.00c, not including duty.

Foreign manganiferous ore, 45-55 per cent iron, 6-10 per cent manganese, is easier at 8.50c to 9.00c, alongside docks, Atlantic ports, Spanish and North African basic ores, 50 to 60 per cent, hold at 7.00c to 8.00c. Swedish basic, 65 per cent, is easier at 7.50c to 8.00c.

Eastern ores, foundry and basic, 56-63 per cent, are available at 7.50c, delivered at eastern Pennsylvania and New Jersey furnaces.

Railroads

Western Roads Restrict Rail Purchases but Take Fastenings More Freely—4000 Tons Placed

TRACK MATERIAL PRICES, PAGE 53

Chicago—Miscellaneous rail inquiries from western roads to care for moderate replacement programs that must be made this season are more active. About 10,000 tons in miscellaneous inquiry is out, and 4000 tons has been awarded by Illinois Central to local mills. This road in the last two years has been buying upward of 30,000 tons annually. Track fastenings sales are relatively high in view of the small amount of rail business. Sales in the last week totaled 3000 to 3500 tons. Rolled steel car wheels are in encouraging demand.

Buffalo—Rail mills have been operating on single turn for some days but are said to have reached the end of their releases. A boat load of steel rails cleared here April 28 for head of the lakes, the first movement of this character this year.

Pittsburgh — New inquiry for rails and fastenings is lacking and action is deferred on requirements of the New York Central. Miscellaneous specifications are slow and slightly smaller than a month ago.

Cleveland—Railroads with headquarters here fail to increase their steel purchases, and determination of the actual award of the steel gondola cars for the Wheeling & Lake Erie is still withheld. Sherwin-Williams Co., Cleveland, is reported inquiring for ten tank cars.

Rail Orders Placed

Illinois Central railroad, 4000 tons, to Illinois Steel Co. and Inland Steel Co., Chicago.

Locomotives Placed

Great Northern, three locomotives to be built in its shops at Spokane, Wash.

Car Orders Pending

Sherwin-Williams Co., Cleveland, ten tank cars, bids asked.

Rail Orders Pending

Several western roads, approximately 10,000 tons.

Restores Overweight Rule

New York—Institute of Scrap Iron and Steel Inc. states that the federal trade commission has agreed to rescind its action in eliminating from scrap industry the rule which condemns the failure of dealers or brokers to pass on to the shipper credits for overweights which they may have received from the steel mill or foundry.

Wire Shows Little Change But Holds Position Well

Wire Prices, Page 53

Chicago — Wire products sales, chiefly merchant, improved in the last few days, pulling April ahead of March. It appears July will be the low month in shipments. Only slight gains are noted in manufacturers' wire. Quotations are nominal at $2, Chicago or western mills, for nails, and 2.25c for plain wire. Shipments of mesh for highway surfacing are making seasonal gains.

Worcester, Mass.—No change is apparent in the wire market. Shipments and inquiry continue low.

Pittsburgh — Demand for wire products is unchanged. April shipments failed to exceed March, with specifications still spotty. Stocks accumulated by jobbers a short time ago are restricting current orders while consumption of manufacturers' wire is unchanged. Nails are steady at 1.95c in carloads with plain wire continuing 2.20c and wire rods $37.

Refractory Buying not Improved; Prices Weak

Refractories Prices, Page 60

Pittsburgh—Sales of refractory material have not improved. March and April activity were the lowest in recent years and sellers see little indication of increase. Steel plants maintain small stocks and are ordering only sufficient material to meet the small demands of the few furnaces in operation. Blast furnace relining work is slow and practically no business is appearing for new construction. Prices are rather weak, some shading of the general market quotations being noted. Producers have made no change, however, in official prices of $38 for first quality fire clay and silica brick. Second quality material continues $25 to $30, with magnesite brick $61.50 and chrome brick $42.50.

Structural Shapes

Rally in Awards Expected Late in May When 100,000 Tons in East Go in For General Contract — Insurance Building Takes 5500 Tons—Bridges Active in West

STRUCTURAL SHAPE PRICES, PAGE 53

New York—The first substantial rally in structural steel demand may be expected late this month with generally contract bids going in on more than 100,000 tons for federal construction in the East. The Valley Stream, N. Y., grade elimination bids go in this week, about 13,000 tons. For the first Knickerbocker City unit, 750 tons have been placed, while 5500 tons have been closed for a downtown insurance building. Private building is dull, but may benefit from building trades wage reductions which are being made without serious labor troubles. Prices on plain material at 1.60c, Pittsburgh, are likely to be thoroughly tested this month on large federal tonnages.

Boston—While several fair-sized structural projects are pending, practically all public building, fresh inquiry is light. More than 500 tons for the Latin school, Boston, has been placed. There has been a small increase in small lots, notably for artificial ice plants, although these take little steel as a rule. Bethlehem Fabricators Inc., took one such job at Meriden, Conn. A school building at Norwich will take 120 tons. Putnam, Conn., postoffice, a small tonnage, closes May 11. Moderate reductions in building trades wages are being made without serious labor troubles. Recent imports of light shapes, channels, angles and other steels from Belgium have been heavier.

Philadelphia—Apart from pending government work chiefly in Washington and with the withdrawal of the 2800-ton Hershey Chocolate Co. plant on a structural basis, the 2300-ton Scranton, Pa., school is the only outstanding active project. Shapes are steady at 1.70c, nearest mill.

Pittsburgh — Structural steel awards and inquiry hold in their recent volume with little change noted in operations of fabricators or in specifications for plain material. Pending work is accumulating and improvement in awards is looked for shortly. Plain shapes are nominally 1.60c, Pittsburgh.

Buffalo—A district fabricator has taken three orders aggregating approximately 1000 tons. Other pending inquiry has not yet been closed.

Cleveland—Contractors have been announced on the Ohio highway's April 15 letting, but the two bridges of any size have not as yet been bought. Another letting is scheduled for May 6. The local postoffice foundation has been awarded, as has been the Canton, O., postoffice. Fabricated prices are showing a firmer trend with the elimination on several recent lettings of erratically low bids. Other awards here last week were confined to three or four jobs, all under 50 tons each. Plain material is firm at 1.60c, on the slow volume of current releases.

Chicago—State bridge work and Century of Progress exposition buildings, including several for private exhibitors, form the chief backlog of inquiries. Awards locally in the last week were only about 1000 tons. A number of postoffice jobs are being closed, usually from 25 to 75 tons. Plain material is quoted 1.70c, Chicago. Minnesota, North Dakota, Iowa and Indiana highway departments will buy about 2000 tons in the next 30 days.

Contracts Placed

5500 tons, office building, Insurance Co. of North America, Pine, Gold and Cliff streets, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through A. L. Hartridge Co.

2500 tons, bridge steel for Union Pacific railroad, to American Bridge Co., Pittsburgh, and Consolidated Steel Corp., Los Angeles.

900 tons, foundation, postoffice, Cleveland, to American Bridge Co., Pittsburgh, through Cleveland Union Terminals Co., Cleveland.

750 tons, first unit, Knickerbocker City development, New York, to Lehigh Structural Steel Co., Allentown, Pa., through Fred F. French Co., builder.

750 tons, four highway bridges, Minnesota, to American Bridge Co., Pittsburgh.

700 tons, postoffice, Rockford, Ill., to American Bridge Co., Pittsburgh, at $36,750.

525 tons, Boys' Latin school, Boston, to Boston Structural Steel Co. Inc., Boston; John Bowen Co., Boston, contractor.

325 tons, bridge over Russian river, Geyserville, Calif., to Columbia Steel Co., San Francisco.

320 tons, bridge, Muncy, Pa., for Reading Co., to McClintic-Marshall Corp., Bethlehem, Pa.

265 tons, highway bridge, South McCook, Nebr., to St. Joseph Structural Steel Co., St. Joseph, Mo.

245 tons, postoffice, Canton, O., to McClintic-Marshall Corp., Bethlehem, Pa., through Gibbons-Grable Co., Canton, Pollak Steel Co., Cincinnati, awarded 47 tons reinforcing.

215 tons, convent, Scranton, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

200 tons, highway bridges in North Dakota to Illinois Steel Bridge Co., Jacksonville, Ill., and McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, Jesuit novitiate, Sheridan, Oreg., to Poole & McGonigle, Portland, Oreg.

175 tons, elevator, Kansas City, Mo., to Mississippi Valley Structural Steel Co., Chicago.

170 tons, bridge, Coal county, Oklahoma, to Muskegee Iron Works, Muskegee, Okla.

170 tons, Sixteenth street bridge, Chicago, to Gage Structural Steel Co., Chicago.

160 tons, storage tank structural work for Standard Oil Co. at Wood River, Ill., to Hansell-Elcock Co., Chicago.

145 tons, bridge spans for Minnesota highway department to American Bridge Co., Pittsburgh, and McClintic-Marshall Corp., Bethlehem, Pa.

155 tons, girder spans, Wabasha, Minn., to unstated.

150 tons, sluice gates and shapes, Kankana, Wis., for United States engineer, Milwaukee, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

140 tons, building, Sun Oil Co., Philadelphia district, to Belmont Iron Works, Philadelphia.

125 tons, Paulwaukee airport, Chicago, to Austin Co., Cleveland.

110 tons, highway bridge work, Adams county, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

105 tons, postoffice, Pocatello, Idaho, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

105 tons, bridge, project No. 150, Ohio, to Brookville Bridge Co., Brookville, O., through S. Monroe & Son Co., Portsmouth, O., contractors. Lettings of April 15.

100 tons, additional requirements, Albany Port district commission, Albany, N. Y., to Lackawanna Steel Construction Co., Buffalo.

100 tons, highway bridge, Case county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

100 tons, angles and channels, navy, Norfolk, Va., to Morris, Wheeler & Co., Philadelphia.

100 tons, state bridges, Florida, to American Bridge, Pittsburgh; about 90 tons still pending.

Awards Compared

	Tons
Awards, week ended Apr. 30	15,335
Awards, week ended Apr. 23	11,500
Awards, week ended Apr. 16	7,770
Awards, this week in 1931	26,202
Av. weekly awards, 1931....	34,236
Av. weekly awards, 1932....	14,034
Av. weekly awards, March....	17,003
Awards to date, 1931.....	757,799
Awards to date, 1932.....	252,625

Unstated tonnage, plant addition, Merck & Co., Rahway, N. J., to Savary & Glaiser, Dunellen, N. J.; R. E. Lamb Co., Philadelphia, contractor.

Contracts Pending

2800 tons, plant, Hershey, Pa., for Hershey Chocolate Co.; withdrawn. To be built on reinforced concrete basis.

2700 tons, state and county bridges, West Virginia; bids in April 26.

1000 tons, postoffice and courthouse, Knoxville, Tenn.; A. W. Kutsche & Co., Detroit, low on general contract; bids of April 26.

1000 tons, state highway bridge at Chippewa Falls, Wis.; Worden-Allen Co., Milwaukee, low.

835 tons, bridge, Manistee county, Michigan; bids postponed from May 11 to May 19.

850 tons, postoffice, Paterson, N. J.; bids May 23, Washington.

700 tons, highway bridge, Sacramento, Calif.

650 tons, partial requirements, St. Johns' Park terminal, New York Central railroad, New York.

600 tons, Kress store, Hollywood, Calif.; bids April 27.

600 tons, hotel, Stockbridge, Mass.

575 tons, highway bridge, Crookston, Minn.

502 tons, sheet piling, sedimentation basins, Howard Bend plant of St. Louis waterworks; bids May 10, St. Louis board of public service.

500 tons, bridge work, Iowa highway commission.

500 tons, Illinois highway bridges.

500 tons, underpass for Southern Pacific Co., San Francisco; bids being taken.

500 tons, boiler house, city of Ft. Wayne, Ind.

400 tons, bridge work, Oklahoma highway commission.

300 tons, state highway bridges, New York; bids April 26 and May 10.

300 tons, Arlington street bridge, Boston.

300 tons, warehouse and shed, Richmond, Va.

200 tons, shapes and bars, postoffice and courthouse, Miami, Okla.; James I. Barnes, Logansport, Ind., low, $146,200.

200 tons, highway bridge, Hammonton, N. J.

175 tons, grandstand, Pomona fairgrounds, Los Angeles county, Calif.; McClintic-Marshall Corp., Bethlehem, Pa., low.

150 tons, Montgomery locks, Ohio river, United States engineer, Pittsburgh; also 770 tons class A steel castings; 32 tons class B steel castings; 25 tons bolts, and 20 tons iron castings; Booth & Flinn Co. Inc., Pittsburgh, low, $1,621,593.

135 tons, I-beams for small bridges, Iowa; bids in, Sioux City, April 25.

125 tons, bridges, Custer county, Oklahoma, for state highway commission; bids May 3.

120 tons, school, Norwich, Conn.

110 tons, high school, Downingtown, Pa.; bids opened.

108 tons, bridge, Chillocothe, O., for Ohio state highway department; bids May 6 at Columbus, O. Included, 30 tons reinforcing.

100 tons, buildings, grade crossing elimination, Elmira, N. Y.; John Cunningham, Elmira, contractor.

Unstated tonnage, two Michigan highway bridges. One, 108-foot span, Arenac county, Michigan; bids May 17. Second, two 55-foot spans, Clinton county, Michigan; bids May 18.

Concrete Bars

St. Louis Water Basin Job Takes Over 1000 Tons—Contractors Named on 1500-Ton California Dam—Bids This Week on 1400 Tons, Valley Stream, N. Y.

REINFORCING BAR PRICES, PAGE 53

New York—Reinforcing bar inquiry is light and lettings slow to be closed. The largest pending tonnage is about 1400 tons for the Valley Stream, N. Y., grade elimination, general contract bids going in this week. A building for Sears Roebuck & Co., at Hackensack, N. J., will take 400 tons. Structural billet prices are untested at 1.60c, Pittsburgh, on mill lengths, but rerolled material is being offered in this market as low as 1.25c, Pittsburgh.

Boston—Highway and bridge work is slightly more active, although steel requirements are well below normal for this period. Lane Construction Co., Meriden, Conn., is low on state bridge work at Belchertown and Granby, Mass., with $125,262. Bids go in on foundations, Portland, Me., postoffice May 9. Prices on mill lengths are unchanged generally on a basis of 1.60c, Pittsburgh, but untested on volume business.

Philadelphia—Approximately 500 tons of reinforcing bars will be required for the Hershey Chocolate Co. plant, Hershey, Pa., which is to be concrete instead of formerly intended structural frame. Current buying is light. The market is 1.75c, Pittsburgh, on cut lengths.

Pittsburgh—New business in reinforcing bars is lagging and although shipments during the past month were steady, the decline in new business points to quiet during May. A fair tonnage is involved in pending work while inquiry is steady. Mill lengths of billet bars continue 1.60c, Pittsburgh.

Cleveland—The market is becoming more active in that more reinforcing steel projects of size are coming into the market. Closing is expected May 3 by a Chicago contractor on 450 tons of rail steel for the Akron, O., building work for Quaker Oats Co. A Franklin county, Ohio, bridge, may take 100 tons of bars. The Norwalk, O., sewage plant closes May 7. A Cleveland contractor has a bridge for North Beaver township, Pa. Several bar jobs are included in the state letting of May 6, but the largest is for only 67 tons.

Chicago—Bids were taken at Springfield, Ill., April 27 on Illinois road and bridge work, involving about 300 tons. Wisconsin highway department still has 1000 to 1500 tons of road and overhead bridge work to place. Attractive projects, chiefly public, bring out reinforcing bar price concessions of $1 to $3 a ton.

Birmingham, Ala.—While a number of projects are in sight in the South in the way of highway construction, but little business has come from that source as yet for reinforcing steel. Production here is limited.

Awards Compared

	Tons
Awards, week ended Apr. 30	**2,408**
Awards, week ended Apr. 23	**4,767**
Awards, week ended Apr. 16	**8,206**
Awards, this week, 1931	**3,959**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,584**
Av. weekly awards, March	**3,997**
Awards, to date, 1931	**125,861**
Awards to date, 1932	**82,500**

Contracts Placed

800 tons, power house, Passaic, N. J., to Lackawanna Steel Construction Co., Buffalo.

350 tons, Kentucky State highway department project, Carrollton, Ky., to Jones & Laughlin Steel Corp., Pittsburgh, through Southeastern Construction Co., Eminence, Ky., contractor.

200 tons, teacher's college, Arcata, Calif., to Truscon Steel Co., Youngstown, O.

166 tons, foundation, postoffice, Norfolk, Va., to Hall-Hodges Co., Norfolk; Virginia Engineering Co. Inc., Newport News, Va., general contractor.

160 tons, barracks, Mitchel Field, Long Island, N. Y., to Concrete Steel Co., New York.

156 tons, United States engineer, Milwaukee, to C. T. DeHaas, Marquette, Mich.

150 tons, postoffice, Davenport, Iowa to unstated.

132 tons, Los Angeles county, to Blue Diamond Co., Los Angeles.

100 tons, Jesuit novitiate, Sheridan, Oreg., to Truscon Steel Co., Youngstown, O.

100 tons, harbor work, Albany, N. Y., to Lackawanna Steel Construction Co., Buffalo.

100 tons, sewer, Newark, N. J., to Truscon Steel Co., Youngstown, O.

Contracts Pending

1500 tons, Pine Canyon dam, Pasadena, Calif. General contract to Bent Bros., Winston Bros. and W. C. Crowell, Los Angeles.
1125 tons, sedimentation basins, Howard Bend plant, St. Louis waterworks; bids, St. Louis board of public service, May 10.
500 tons, plant, Hershey Chocolate Co., Hershey, Pa.
500 tons, Montgomery dam, Ohio river; Booth & Flinn Co., Pittsburgh, low on general contract.
450 tons, rail steel, building and concrete bins, Akron, O., for Quaker Oats Co.; James Stewart Co., Chicago, contractor. To be closed May 3.
400 tons, building, Sears, Roebuck & Co., Hackensack, N. J.
400 tons, waterworks, Moline, Ill.
300 tons, veterans' hospital, Danville, Ill.
250 tons, yard service building and retaining wall, separate contracts, for Cincinnati Terminal Co., Cincinnati.
240 tons, 2790 pieces, squares, 1 and 1¼-inch, deformed structural billet steel, Panama; bids May 9, schedule 2748.
222 tons, Montgomery locks, Ohio river, United States engineer, Pittsburgh; Booth & Flinn Co. Inc., Pittsburgh, low; bids April 22.
205 tons, highway work, Solano county, Calif.; bids opened.
200 tons, postoffice, Rockford, Ill.
200 tons, sewage plant, Norwalk, O.; bids May 7.
174 tons, bridge across Venice boulevard, Los Angeles; bids opened.
138 tons, bridge over Rocky creek, Monterey county, Calif.; bids opened.
125 tons, postoffice, Waukegan, Ill.
125 tons, mesh, paving, Fourteenth street, Washington.
100 tons, county bridge, Franklin county, O.; bids May 4.
100 tons, grain elevator, Albany, N. Y., for New York state port commissioner; J. M. Stewart & Co., Chicago, low on general contract.
Unstated tonnage, bridge over Mahoning river, North Beaver township, Pennsylvania; Highway Construction Co., Cleveland, contractor.

Buy Briquetting Pitch

New York—European countries, particularly France, are buying considerable quantities of briquetting pitch, with prices advancing from $9 to $10, f.o.b., Atlantic seaboard, at the beginning of the year, to over $14, currently. Contracting is now being done for delivery next winter, due to impending hot weather.

Bar Mill Wages Steady

Youngstown, O.—Wage rates in bar iron mills having contract arrangements with the Amalgamated Association of Iron, Steel and Tin Workers will be based on a 1.65c card rate for May and June, unchanged from March and April. Puddlers will continue to receive $10.05 per ton.

Pipe

American Mills Expect 8000 Tons for Irak Line—Los Angeles Awards 5000 Tons of Cast

PIPE PRICES, PAGE 67

New York—Of 16,000 tons of 10¾-inch steel pipe recently purchased for the Irak oil line, 6000 tons went to England and 2000 tons to Germany. American producers are hopeful of obtaining the remaining 8000 tons. Municipal requirements for cast iron pipe are light. A New Jersey utility placed a small lot of 20-inch. Inquiry for New York city yard stocks is not expected before June 1. Prices continue weak, with $22, eastern foundry, frequent.

Boston—Cast pipe buying is light for this season, although several municipalities have bids on small lots, one taking close to 500 tons. Prices are weak. Utilities are buying little.

Pittsburgh—Changes in pipe demand lack significance but generally are for the better. Standard pipe still is moving slowly in what usually is an active period. Oil country goods are in poor demand despite a slight improvement in prospects for more active drilling operations. The Irak Petroleum Corp.'s line continues the only active pipe line project, domestic work remaining dull.

Youngstown, O. — Better operations by makers of butt-welded and lap-welded pipe here are due to a slightly improved inflow of new orders. Receipt of additional electric welded pipe business put two such mills here into operation last week.

Chicago—Waterworks and sewage treatment projects are active. Bonds have been voted and engineering contracts awarded for a $60,000 sewer and water system for Campbellsport, Wis., and a $100,000 sewage system and disposal plant at Kohler, Wis., both projects including about 1000 tons of miscellaneous cast pipe sizes. St. Louis has awarded 200 tons of 8 and 10-inch; and Oshkosh, Wis., 100 tons of 6-inch. St. Louis Industrial Gas Co., St. Louis, is taking preliminary figures on a natural gas pipe line and distribution system from the Hugoton, Kans., field to St. Louis.

Birmingham, Ala.—Production of cast iron pressure pipe in this district is under 40 per cent. Several awards were made recently. Local plants are bidding on more than 8000 tons.

Cast Pipe Placed

5025 tons, Los Angeles; to United States Pipe & Foundry Co., Birmingham, Ala., 2540 tons; to American Cast Iron Pipe Co., Birmingham, Ala.; 775 tons; and to Pacific States Iron Pipe Co., Provo, Utah, 550 tons.
600 tons, Somers, N. Y., to R. D. Wood & Co., Florence, N. J., previously reported going to another foundry.
330 tons, 6 and 8-inch, Bethel, O., to Central Foundry Co., Hamilton, O.
260 tons, 8-inch, Bedford, Pa.; to United States Pipe & Foundry Co., Burlington, N. J.
200 tons, 8 and 10-inch, St. Louis, to American Cast Iron Pipe Co., Birmingham, Ala.
175 tons, 6 to 12-inch, Troy, O., to R. D. Wood & Co., Philadelphia, and Central Foundry Co., Hamilton, O.
122 tons, 20-inch with fittings, Brewster, N. Y., to Donaldson Iron Works, Emaus, Pa.
100 tons, 6-inch, Oshkosh, Wis., to Glamorgan Pipe & Foundry Co., Birmingham, Ala.
100 tons, 6 and 8-inch, Bloomfield, N. J., to Warren Foundry & Pipe Co., Phillipsburg, Pa.

Steel Pipe Placed

175 tons, 18-inch for Gulf Coast Pipe Line Co., Houston, Tex., to Wyatt Metal & Boiler Works, Dallas, Tex.

Cast Pipe Pending

500 tons, miscellaneous sizes, sewage system and disposal plant, Kohler, Wis.
500 tons, sewer and water system, Campbellsport, Wis.; J. Donohue Engineering Co., Sheboygan, Wis., engineer.
500 tons, state hospital, Wingdale, N. Y.; P. Tomassetti low.
300 tons, state school, Warwick, N. Y., contractor buying.

Steel Pipe Pending

2400 tons, 45-inch, Passaic Valley Water commission, Passaic, N. J.; to be awarded May 3.
800 tons, 36-inch; St. Louis; bids May 10.
Unstated, 5693 feet, up to 12-inch, mainly 3 and 4-inch, Montgomery locks, Ohio river, United States engineer, Pittsburgh; Booth & Flinn Co., Inc., Pittsburgh, low.
Unstated tonnage, natural gas line and distribution system from Hugoton, Kans., field to St. Louis, for St. Louis Industrial Gas Co., St. Louis.

Cleveland-Cliffs Iron Co., Cleveland, had net loss of $21,360 after charges in 1931. During 1930 the company reported a net profit of $4,886,150, equal to $5.14 a share after dividends on the $5 preferred stock and $6 preferred stock of the McKinney Steel Holding Co., for nine months.

Strip

Slack Demand Continues with Automotive Needs Deferred—Prices Being Held Well

STRIP PRICES, PAGE 53

New York—Specifications on 29,530 pounds of strip for the Baldwin, L. L., ordnance plant bids May 10, include 13,000 pounds hot-rolled, annealed, pickled or sand blast finished and oiled, 4 x 0.125-inch in 8-foot lengths; remainder deep drawn, grade B, bright finished strip in eight-foot lengths, most to be 0.30 x 2⅞-inch and 0.625 x 4-inch. This is for 10,000 three-inch illuminating projectiles on which bids were recently taken.

Cold-rolled strip continues to hold its $2 a ton advance, at 2.00c, Pittsburgh. While there has been little tonnage to test the market no efforts have been made to stimulate buying through concessions. Hot-rolled is 1.40c and 1.50c, Pittsburgh, in carlots, with a $2 premium on less-than-carlots.

Philadelphia — Demand for steel strip is slack and little tonnage is being moved. Prices continue steady, however.

Pittsburgh—Strip buying is slow and generally unchanged. Mills have received only small lots from Ford Motor Co. except in the form of rustless steel, which continues fairly active. April shipments and incoming business were nearly equal to the volume of the preceding month. Prices are holding well and large buyers usually are paying 1.50c and 1.60c for hot strip with smaller lots going at a $2 a ton premium. Cold-rolled strip continues 2.00c. Mill operations are unchanged at 15 to 20 per cent.

Youngstown, O. — Some expansion in new strip business has been due to automotive partsmakers' revival in activity. This is more evident in hot-rolled strip, but with fair tonnage also in narrow cold-rolled. Demand from collateral manufacturing lines is better also, giving mills fairly comfortable order books. Quotations on all widths and gages appear firm.

Cleveland—A local automobile parts interest is getting better releases on Ford frames and at about 400 daily is consuming more wide hot-rolled strip. In general, this district, however, has decreased its hot-rolled ordering. The 1.50c and 1.60c, Pittsburgh, figures are holding on small orders, usual concessions being $2 a ton less for large takers. Cold-rolled mill capacity continues far from filled, orders being in pound lots and scarce. The 2.00c, Cleveland, base is holding on the latter.

Chicago—Hot-rolled strip mills in this district have obtained further automotive releases. Production remains at 20 per cent. Wide hot-rolled is 1.50c to 1.60c, Chicago, while cold-rolled is 2.00c, Pittsburgh-Cleveland.

Operations Rise Again; Now Are 24 Per Cent

Pittsburgh—Operations generally are unchanged with only slight variations in early prospect. Ingot production continued during the past week at 22 per cent, with blast furnace schedules unchanged at 9 active steelworks stacks out of 54. Sheet production increased fractionally to slightly above 25 with tin plate continuing moderately above 50. Strip and pipe output held at 15 to 20 per cent.

Operations, week ended April 30	**24**
Operations, week ended April 23	**23**
Operations, week ended April 16	**22**
Operations, this week, 1931	**49.5**
High for 1932, Feb. 6	**28.5**
Low for 1932—Jan. 2, Apr. 9, 16	**22**

Buffalo—District steelworks operated at 35 per cent of capacity during the week ending April 30. A reduction of eight points is in prospect for this week due to staggered operations, with nine open-hearth furnaces on. Two district works are scheduled to be down this week.

Youngstown, O.—Steel output averaged 28 per cent last week, up two points from the prior week, and probably will show a further gain this week. Ingot production tapered toward the close of last week but finishing mills were more active, largely as a result of better automobile buying. Twenty-seven of 83 while 5500 tons have been closed for plain material at 1.60c, Pittsburgh.

Cleveland—Steel ingot production is 23 per cent this week. Last week ingot production averaged 25 per cent, a gain of five points over the week ended April 23. American Steel & Wire Co. is running three open hearths; Corrigan, McKinney Steel Co., five. Otis Steel Co. ran two open hearths until May 1. Finishing mill activity is spotty. Four blast furnaces are in.

Philadelphia—Eastern steelmaking operations are fractionally lower at about 14 per cent, with little change expected.

Chicago—Chicago district ingot production this week will be a shade above 20 per cent, as against slightly below that point in the week just closed. Eight of the district's 36 steelworks blast furnaces are active. Rail mill production will continue at 15 to 20 per cent output for the next 15 to 30 days.

Birmingham, Ala.—A dip in steel production based on ingot output the past week brought the estimate in this district down to 41 per cent from 48 and a heavier decline is set for the new week. Rail rolling will cease, the array of small contracts which warranted resumption of rail mill a few weeks ago being about dissipated.

Warehouses Feel Some Seasonal Improvement

Warehouse Prices, Page 67

New York—Warehouse volume gained slightly during the closing week of April, bringing the sales total just ahead of the previous month with some jobbers. The gain was well distributed.

Philadelphia—Bookings by warehouses on April are slightly less than in March, with prices unchanged and no signs of improvement.

Pittsburgh—Galvanized sheet demand has been stimulated slightly by more favorable weather. Activity in other products generally is unchanged with prices fairly steady.

Detroit—Encouragement is still to be derived from the fact that generally steel demand from warehouse is holding a gain set in early April. Prices are unchanged.

Chicago — Warehouses have advanced bolt and nut prices about 5 per cent, to a discount of 70 off instead of 73. Products affected are carriage and machine bolts, lag screws, tap bolts, stub bolts, plow and tire bolts. Nuts are 70 off for keg lots and 60 off for less-keg. April is ahead of March in the number of orders, but the dollar volume is uncertain. The improvement came in the latter part of April. Warehouses are benefiting indirectly from automotive parts manufacture.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.00
Pittsburgh, dist. fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Valley furnace	15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	14.76 to 15.01
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.26 to 15.51

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	15.76 to 16.01

MALLEABLE

Valley furnace	15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.00
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.50 to 15.00

BESSEMER

Valley furnace	15.50
Pittsburgh, delivered	16.13 to 17.13
Pittsburgh, furnace	15.50 to 16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.50
Pittsburgh district fur.	15.00 to 15.50
Pittsburgh, delivered	15.63 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.31 to 8.81
Chicago, ovens	7.50
New England, del.	10.00
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$10.50 to 10 75
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00 to 27.00
Youngstown	26.00
Cleveland	26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	85.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.	113.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Eastern Pennsylvania and Valley Prices Easier—Shipments to Automotive Foundries Gain

PIG IRON PRICES, PAGE 60

Pittsburgh—Demand for pig iron continues at the lowest level in recent years, April marking a further decline in new business and shipments. Orders usually are only for carload lots and no inquiries are appearing. Prices are nominal and concessions continue to be made from recent levels as a result of competitive conditions in certain districts.

Boston—Pig iron shipments continue to drag, foundries in few instances operating better than 20 per cent. A considerable part of the volume is moved by trucks from the local furnace and from foreign stocks at Providence, R. I., and Bridgeport, Conn. Buffalo iron is reported to have been offered under $18, delivered, for future shipment. The New England foundry range is $16.50 to $17.50, furnace, for nearby delivery, while as low as $16, dock, is heard for Dutch and Indian iron.

New York—Pig iron sales, amounting to close to 2000 tons for the week, include 1000 tons for the Foran Foundry & Equipment Co., Flemington, N. J., placed with an eastern Pennsylvania furnace. Prices are easy, with eastern Pennsylvania iron $14 to $14.25, base, furnace, and Buffalo iron usually moving at $14.50, furnace, with some at $15.

Philadelphia — Eastern Pennsylvania foundry iron is off about 50 cents a ton on light trading. The market now is $14 to $14.25, base, furnace, subject to concessions on attractive orders.

Following conflicting reports, it appears assured the Alan Wood Steel Co.'s furnace at Swedeland, Pa., will not be blown in until fall.

Buffalo—Demand continues dull and prices are unchanged. Brisk demand for barges to move wheat to tidewater has absorbed all available tonnages, and no iron was moved by canal up to May 1.

Youngstown, O.—Pig iron requirements are limited to occasional lots ranging from 50 to 150 tons for quick delivery. Seven of the 32 blast furnaces in the district are operating. Bessemer, malleable and No. 2 foundry are $15; basic, nominally $14.50 to $15; gray forge and No. 3 foundry, $14.50, furnace.

Cleveland—April pig iron shipments were slightly larger than those in March, due to better demand from automotive foundries. Furnaces supplying these foundries expect still further expansion in May. Other lines are quiet; sales by furnace interests with headquarters in Cleveland amounted to about 3000 tons in the past week, lower than in the week preceding. Few inquiries are being issued and only for small lots for immediate delivery. The price holds at $15.50, base, Cleveland furnace, for local delivery and generally $15 for nearby shipment. Lower prices appear from time to time from lake furnaces in outlying competitive districts.

A Canton, O., foundry is placing 200 tons with a valley steelworks furnace. The maximum on valley foundry and malleable iron now appears to be $15, base, furnace.

Cincinnati—The majority of jobbing foundries are out of the market except for occasional carloads. Shipments have been fairly steady in the past few weeks to automotive foundries, although in one or two instances a supply of castings was built up earlier in the year, in a plan to retain employes, which now is reacting toward a lighter melt.

Chicago—Indications are that some basic iron purchases that were held up for a time will be closed in this market shortly. About 1000 tons of low phosphorus iron is active. Northern merchant buyers are slow in strengthening their inventories. Sales, mainly spot, have made no appreciable gain. A western automobile plant is closing its foundry for an indefinite period. A few car loads of silvery iron have been sold. Local jobbing foundries still are on schedules of about 15 to 18 per cent.

St. Louis—Small orders for pig iron are more numerous. Jobbing foundries and specialty makers have booked sufficient business recently to necessitate the purchase of additional iron. Specifications for finished castings, especially automotive, are more liberal. Pig iron shipments during the last half of April were slightly heavier than in the first half. Prices are steady.

Birmingham, Ala.—Melters persist in carrying the smallest stocks possible, practically all orders being for immediate shipment. The market is quiet, and prices unchanged.

Toronto, Ont.—Merchant pig iron sales hold to about 500 tons weekly. No bookings are reported for furture delivery.

Ford Is Figuring on More Ferroalloys

Ferroalloy Prices, Page 60

New York—Ford Motor Co. continues in the ferroalloys market. Following its recently reported purchase of 700 tons of spiegeleisen, it is now figuring on 700 tons of ferromanganese for delivery over the next two months; 500 tons of ferrochrome and 200 tons of ferrosilicon. Activity otherwise is restricted to small specifications, with prices unchanged. Ferromanganese is $75, duty paid, and domestic spiegeleisen, $27, furnace, the latter subjected to concessions for special distress lots.

Pittsburgh—Specifications for ferroalloys generally are unchanged, although shipments show a small decrease over the rate of 30 to 60 days ago. Small lot business in ferromanganese and spiegeleisen is slow, prices continuing $75 for ferromanganese and $27 for spiegeleisen. Prices on other ferroalloys are unchanged with demand light.

Stove Bolt Prices Rise; Bolt, Nut Orders Slow

Bolts, Nuts, Rivets Prices, Page 53

Pittsburgh—Production of bolts, nuts and rivets continues at about 20 per cent with specifications light. Leading consumers still are taking only small lots and requirements of jobbers, railroads and fabricating shops have shown no change over several weeks. Prices are well maintained at 75 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets.

Philadelphia—Following fair orders from jobbers late last month, producers find buying of bolts and nuts is sluggish.

Chicago—Bolt and nut producers have named a 10 per cent increase on stove bolts, the discounts now being 77½, 25 and 10 off in packages, and 86 off in bulk. Thus the spread between packages and bulk now is 2 per cent instead of 8 per cent, formerly. Specifications for bolts, nuts and rivets are spotty. April shipments are slightly under March.

Ninth annual oil burner convention and show, conducted by the American Oil Burner association, which closed in Boston, April 16, set a new high attendance record.

Scrap

Inaction, Distress and Pressure To Sell Depresses Prices to New Lows—Small Sales the Rule

Chicago—More stamina has developed in the steel scrap market after a week of panicky sentiment due to fears of lower ingot production in this district. A leading independent melter of steelmaking grades has restricted slightly its shipments in the last few days, but the outlook is for fairly steady steelworks consumption. Automobile scrap is a growing competitor of factory and railroad scrap in this market, and it is predicted stricter specifications eventually may restrict the scrap movement here largely to railroad and manufacturing plant offerings. A leveling of the recent downward swing in prices has occurred, and more resistance to further weakening is shown. Heavy melting steel remains at $6.50 to $7. More cast borings are being accumu-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.00 to 6.50
Chicago	6.50 to 7.00
Chicago	6.50 to 6.75
Cleve., No. 1	7.25 to 7.50
Cleve., No. 2	7.00 to 7.25
Det., No. 1 deal.	5.50 to 6.00
Det., No. 2 deal.	3.50 to 4.00
E. Pa. del. mill	7.00
N. Y. deal. R. R.	4.50 to 5.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	9.75 to 10.25
St. L. No. 1 sel.	6.75 to 7.25
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.00 to 6.50
Chi. (Factory)	5.50 to 6.00
Cleveland	7.00
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	6.00 to 6.50
Pittsburgh	9.25 to 9.75
Valleys	9.25 to 9.75

BUNDLED SHEETS

Buffalo	4.50 to 5.00
Cinci., deal.	5.50 to 6.00
Cleveland	6.00 to 6.50
Eastern Pa.	5.50
Pittsburgh	8.00 to 8.50
St. Louis	2.00 to 2.50

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.00 to 3.50
Detroit, dealers	3.00 to 3.50
St. Louis	2.00 to 2.50

STEEL RAILS SHORT

Birmingham	11.00 to 11.50
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 10.50
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	9.25 to 9.75
Cinci., deal.	10.00 to 10.50
Detroit, deal.	9.50 to 10.00
Pitts. (open-hearth, 3 ft. and less)	11.00 to 11.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.00 to 6.50
Boston, con.	4.50 to 5.00
Buffalo	8.00 to 8.25
Chicago, net	5.00 to 5.50
Cinci., deal. net	3.75 to 4.25
Det., net deal.	3.00 to 3.50
Eastern, Pa.	6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	6.00 to 6.50

COUPLERS, SPRINGS

Buffalo	9.50 to 10.00
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	10.25 to 10.75
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	10.00 to 10.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	10.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	12.00 to 12.50

FROGS, SWITCHES

Chicago	6.50 to 7.00
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.50 to 7.00
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.00 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.50 to 8.00
Chicago, No. 1	5.50 to 6.15
Chicago, No. 2	6.50 to 7.00
Cinci., No. 2	6.50 to 7.00
Eastern, Pa.	7.50 to 8.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	9.75 to 10.25
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.00 to 8.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.00 to 6.50
Chicago, No. 1	5.00 to 5.50
Cinn., No. 1 dl.	4.50 to 5.00
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	3.50 to 4.00
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.50 to 5.00
Chicago	3.50 to 4.00
Cinn., deal.	3.25 to 3.75
Cleveland	3.50 to 4.00
Detroit	3.00 to 3.50
Eastern, Pa.	3.50 to 4.00
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.60 to .75
Buffalo	5.75 to 6.00
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	3.75 to 4.25
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, dealers	1.00 to 1.25
Buffalo	5.75 to 6.00
Chicago	3.75 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	3.75 to 4.25
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.25 to 4.75
Eastern Pa.	6.50
N. Y., deal.	4.00 to 4.50
St. Louis	5.25 to 5.75

FORGE FLASHINGS

Boston, dealers	3.00 to 3.50
Buffalo	5.00 to 5.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	4.50 to 5.00

FORGE SCRAP

Boston, dealers	2.00 to 2.25
Chicago	9.00 to 9.50
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.00 to 6.50
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.50 to 7.00
Chi., steelworks	5.50 to 6.00
Cleveland	6.75 to 7.00
Eastern Pa., del.	6.00 to 6.50
Pittsburgh, O. H.	8.00 to 8.50
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	10.50 to 11.00
Boston, ship. pt.	8.50 to 9.00
Buffalo	10.00 to 10.50
Chicago	10.65 to 11.20
Eastern Pa.	14.50 to 15.00
St. Louis	10.50 to 11.00

SHAFTING

Boston, ship, pt.	8.50 to 9.00
Chicago	6.75 to 7.30
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	10.00 to 11.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	6.50 to 7.00
Chi., rolled steel	8.00 to 8.50
Cincinnati iron	8.00 to 8.50
E. Pa. steel	8.50 to 9.00
E. Pa. iron	9.50 to 10.00
Pitts. iron	9.50 to 10.00
Pitts., steel	10.25 to 10.75
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.00 to 8.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	8.00 to 8.50
Chicago, mach.	7.30 to 7.85
Chi., railroad	6.45 to 7.00
Chicago, agri.	6.15 to 6.75
Cinn., mach. cup	8.00 to 8.50
Cleve. cupola	7.00 to 7.50
Det., net deal.	7.50 to 8.00
E. Pa. cupola	9.50 to 10.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston, del.	4.00
Bost., mach. cast	7.50 to 8.00
Buffalo, break	6.00 to 6.50
Cleve., break	3.50 to 4.00
Detroit, auto, net deal.	9.50 to 10.00
Det., break., dl.	4.00 to 4.50
Eastern Pa.	9.00
N. Y. No. 1 dl.	5.50 to 5.75
N. Y. break, dl.	5.00 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.00 to 8.50
Buffalo	8.00 to 8.50
Chicago, agri.	6.00 to 6.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.00 to 8.50
Cinci., agri. del.	7.75 to 8.25
Cleveland, rail	10.00 to 10.50
Det. auto deal.	8.00 to 8.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.00 to 10.00
Boston, deal.	5.50 to 6.00
Buffalo	8.00 to 8.50
Chicago	8.50 to 9.00
Eastern Pa.	9.50
New York	5.25 to 5.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.00 to 9.50
Buffalo	10.00 to 10.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

lated for expected future shipments eastward by lake boat.

Boston—Scrap shipments to New England and outside points are light. Steel car axles have brought offers of $8.50, shipping point, while borings and turnings have declined again. No. 1 steel has been delivered at Worcester at $6.10, but little No. 2 steel is moving, with dealers offering $2.75, which fails to interest. Cast grades are dull, little New England tonnage moving to eastern Pennsylvania at $8.50, delivered, for heavy breakable.

New York—Scrap shipments continue light, dullness prevailing in all grades. Harrisburg, Pa., is taking no scrap. Movement through the canal to the Buffalo district has not been heavy. Pipe foundries as a rule have smaller backlogs and several are holding shipments. Prices are nominally unchanged. Stove plate to Bayonne is halted.

Philadelphia—As a result of continued dullness, prices of steel and iron scrap are nominal but lower. Although no sales to consumers have been made, persistent pressure of lower offerings by sellers has reduced No. 1 heavy melting steel to $7, delivered. One dealer has reduced his buying price for shipment to Coatesville, Pa., to $6.50.

Buffalo—Demand for all grades of scrap is negligible, even to the point that steel works are said to have discontinued their purchases of heavy melting steel in New York and other points from which deliveries can be made here at $7.50 for No. 1 material. Nominally prices are a little lower but lack confirmation of actual sales.

Pittsburgh—Quiet in iron and steel scrap has been intensified by continued absence of mill purchases and restriction in shipments against the few orders outstanding. As a result prices are largely nominal with occasional concessions resulting from offering of distress lots. Some grades are finding practically no market. Heavy melting steel is quoted $9.75 to $10.25, with compressed sheets $9.25 to $9.75. The May list of the Pennsylvania railroad involves 21,295 net tons of scrap, including 3650 tons of heavy melting steel, 2835 tons of cast iron wheels and 2500 tons of steel rails.

Cleveland—Some releases on heavy melting steel to local open hearths after being held back for a week have caused a little activity. Miscellaneous grades continue inert. Small tonages for the Valleys have been moved, including some busheling.

Cincinnati—Continued weakness in iron and steel scrap has resulted in lower quotations, heavy melting steel, however, holding at $6.50 to $7. Some blast furnace material is moving, but foundry grades are extremely quiet. Malleable demand has dried up.

St. Louis—Demand for iron and steel scrap continues quiet, particularly steel mill grades. Sales of heavy melting steel and steel specialties have fallen to small proportions. Some malleable and cast scrap has been taken recently but tonnages are light and all for prompt shipment. Requirements of rolling mill scrap have not expanded.

Detroit—Three important scrap lists are being closed, monthly offerings of automotive interests. Chevrolet and Plymouth lists held or bettered the March offerings. Ford's offerings are limited. Recently, the largest scrap shipment on the Great Lakes was made by a Detroit dealer into Buffalo using an ore-carrier and transporting over 5000 tons. Though weakness in the Pittsburgh district is having its detrimental effect, a stronger tone is evident.

Birmingham, Ala.—Prices are unchanged and buying is in limited quantities. No indication is visible as to an early recuperation.

Toronto, Ont.—General business in iron and steel scrap shows no change. Steel scrap sales are at a standstill, but there is a steady flow of spot orders for special lines of iron scrap with machinery cast heading the list. Dealers are carrying good stocks for current needs and are out of the market except when special grades are required. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Inland Steel Co., Chicago, will exhibit at the Century of Progress exposition at Chicago in 1933.

Coke

Foundry Grades Down in Eastern States and Southern Ohio—Connellsville Furnace Easier

COKE PRICES, Page 60

Pittsburgh—Foundry operations are unimproved and requirements of furnace coke also are slow. Orders are limited to small lots with prices nominally unchanged at $2.25 for beehive furnace coke. Foundry coke continues $3.25 to $4.50. The coal market is more active as a result of the Ohio strike, with slack prices 30 to 35 per cent higher over the past few weeks.

Boston—Foundry by-product coke prices have been reduced 50 cents per ton in New England, now being $10, delivered. With operations around 20 per cent, consumers are taking small shipments.

New York—With the foundry melt in this district still averaging under 20 per cent, the movement of metallurgical coke is slow. Prices are soft; beehive furnace coke is $2 to $2.25, Connellsville, the $2.50 price having disappeared almost entirely. Beehive foundry coke is $3 to $3.25, Connells ille, for ordinary grades, and $4 to $4.50, Latrobe, Pa., for premium brands. More sellers of these latter brands are quoting the minimum price.

By-product foundry coke, delivered, Newark, N. J., has been reduced 35 cents per ton to $8.31 to $8.81. In New England a 50-cent reduction brings the price to $10, delivered, and price delivered, Philadelphia, is off 25 cents to $8.50.

Cincinnati—Effective May 1, quotations on by-product foundry coke have been reduced to $5.50, Connellsville base, making the price $8.09, delivered Cincinnati, a reduction of $1. Demand remains light.

St. Louis—Specifications and new orders for metallurgical coke continue at a low ebb. Shipments in April were at a slightly lower daily average than in March.

Birmingham, Ala.—All sales in the coke market are small, and for immediate shipment. Production continues at less than 50 per cent.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.25 to 3.50
Chicago	2.00 to 2.25
Cleveland	3.00 to 3.25
St. Louis	2.75
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 3.00
Cleveland	2.75 to 3.25
St. Louis	3.00
Composition Brass Borings	
New York	3.00 to 3.25
Yellow Brass Tubing	
Cleveland	1.75 to 2.25
Light Copper	
New York	3.25 to 3.50
Chicago	2.37½ to 2.62½
Cleveland	2.50 to 3.00
St. Louis	2.75
Light Brass	
Boston	1.65 to 1.85
Chicago	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Lead	
St. Louis	2.00
Zinc	
New York	1.00
Cleveland	0.87½ to 1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	10.50 to 11.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.00 to 3.50

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.12½

Metals

Lead Activity Predominates in Market—Zinc Now at New Low —Antimony, Tin Ease

New York—Activity in lead predominated in the metal market last week. Demand for zinc was somewhat improved but copper, tin, aluminum and antimony still were quiet. Zinc, tin and antimony prices were easier. Other quotations remained largely unchanged.

Copper—Domestic sales of copper continued in small volume with consumers reported well covered on requirements at current slow operating rates. Export business also was slow with April business amounting to little more than 9200 tons. Electrolytic copper could be had from custom smelters last week at 5.75c, Connecticut, for delivery some months ahead and at 5.50c from resellers. Mine producers remained out of the market. Late in the week, the senate finance committee rejected the proposal for a 5-cent duty on copper after approving the measure earlier in the week. Possibility of a copper levy at this session of congress seems remote. Trade interests see little possibility of a much stronger copper market until outlook for related industries improves.

Lead—Prices continued steady on the basis of 2.90c, East St. Louis, and 3.00c, New York. April business was in good volume with battery makers, corroders, foil manufacturers, sheet and pipe interests well represented in the market.

Zinc—The metal was available at a new all-time low of 2.55c, East St. Louis, late in the week. Many sellers were reluctant to meet the new low price but sufficient metal was available for current restricted demand.

Tin—Demand for straits tin was far below normal levels last week. Prices tended slightly downward although largely nominal due to lack of trading. International Tin committee voted for a further cut of 20,000 tons yearly in production but this must first be approved by participating producing countries before becoming effective.

Aluminum—The market remained quiet with prices unchanged.

Antimony—Prices eased off during the week with the domestic market still dull.

Coke By-Products Shipments Improved

New York—Benzol volume was slightly heavier in April as compared with March. Demand for toluol also stepped up, business increasing last week, indirectly due to heavier requirements of the automotive industry. Xylol and solvent naphtha are unchanged in volume. Prices on all distillates are firm. Phenol shipments are light. Naphthalene is seasonally active on contract shipments. The bulk of domestic sulphate of ammonia is moving at $22 a ton, Atlantic port, although imported material is available at less.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants in

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10 to 1.20

Quicksilver Easier

New York—The quicksilver market remains quiet and prices are easier than a week ago. Small lots on spot delivery are quoted $71 to $73, a virgin flask of 76 pounds, with round lots held at $70.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
April 23	5.75	6.12½	5.50	20.75	21.05	3.00	2.90	2.62½	22.90	5.62½	35.00
April 25	5.75	6.12½	5.50	20.00	20.30	3.00	2.90	2.62½	22.90	5.35	35.00
April 26	5.75	6.12½	5.50	19.62½	19.92½	3.00	2.90	2.60	22.90	5.35	35.00
April 27	5.75	6.12½	5.50	19.45	19.75	3.00	2.90	2.60	22.90	5.35	35.00
April 28	5.75	6.12½	5.50	19.50	19.80	3.00	2.90	2.55	22.90	5.35	35.00
April 29	5.75	6.12½	5.50	19.00	19.30	3.00	2.90	2.55	22.90	5.35	35.00

Pacific Coast

Somewhat Better Activity Is Shown in Awards and Prospects —Hoover Dam Offers Tonnages Of Plates for Tunnel Gates and Outlets—Hydraulic Work Will Require Much Steel

Seattle—While several important public projects are up for figures within 30 days, business in the Pacific Northwest iron and steel markets continues slack.

Awards this week approximated 500 tons. Truscon Steel Co.'s Portland, Oreg., office booked 100 tons of reinforcing bars for the Jesuit novitiate at Sheridan, Oreg., Poole & McGonigle, Portland, taking the shapes subcontract, 200 tons. The government has awarded to Beall Pipe & Tank Corp., Portland, the contract to construct the penstocks for the Wippel pumping plant, Kittitas (Wash.) reclamation project, 180 tons of light gage plates. Cle Elum, Wash., awarded to W. F. Way, Seattle, the contract to build two 500,000-gallon water tanks. Only a small amount of reinforcing is involved. Commercial Boiler Works, Seattle, was low bidder on this job, specifying steel tanks calling for 110 tons.

Vancouver, B. C., water board will receive bids May 27 for supplies for a water tunnel, including 75 tons of steel pipe, steel shaft caps, steel gates and valves, flanges, bolts and nuts. Puget Sound Navy Yard will open tenders May 2 and 5 for about 60 tons of galvanized steel and steel hull plates. Seattle is in the market for 50,000 feet of galvanized guy wire for the lighting department.

Awards Make Some Gain

San Francisco—(*By Air Mail*)—Several fair sized awards were reported during the week, among which were 5025 tons of cast iron pipe for Los Angeles, Calif., and 1600 tons of structural shapes for the Sacramento postoffice, placed with Judson-Pacific Co. Considerable interest is being manifested by Pacific Coast plate fabricators in the tunnel outlets for the Hoover Dam project at Boulder City, Nev., bids on which open June 15. Three alternates are called for involving from 52,000 tons to 60,000 tons of plates. Prices appear somewhat firmer.

Truscon Steel Co. booked 200 tons of reinforcing bars for a teachers' college at Arcata, Calif. Pending business exceeds 6000 tons, including 1500 tons for the Pine Canyon dam, Pasadena, Calif., and 1200 tons for the El Capitan dam, San Diego, Calif. Out-of-stock quotations in San Francisco continue unchanged at 2.60c, base, on carload lots, while Los Angeles district prices appear firmer at 2.10c. Mild steel bars are quoted at 2.00c, c.i.f.

Bids will be opened May 2 for 2500 tons of plates and shapes, mostly plates, for bulkhead gates and frames for the Hoover dam project. Prices remain unchanged at 1.80c, c.i.f.

Structural shape awards aggregated over 2200 tons. Columbia Steel Co., booked 325 tons for a bridge over the Russian river at Geyserville, Calif. Bids are being taken on 2500 tons for bridges for the Union Pacific Co. on the Long Beach, Calif., cut-off, and on 600 tons for a Kress store in Hollywood, Calif. Plain standard shapes are quoted at 2.00c, c.i.f. while wide flange material holds at 2.10c.

Steel in Europe

New Tariff Gives Hope That Tide of Imports Will Lessen

London—(*By Cable*)—New tariff rates on steel products, much increased over the former rates, have been welcomed as a powerful stimulus to the steel trade but Birmingham merchants expect some imports will continue to be made.

Continental billets previously quoted at £3 19s, delivered Birmingham, now are £4 15s, compared with the British price of £5 7s 6d. Recent domestic buying has been sharply restricted but inquiries are expanding. Galvanized sheets are weaker.

The Continent is seriously affected by the new British tariff but exports still are possible. Berlin reports sale of

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 28

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.52	2 17 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	10.25	2 16 0*	9.23	1 18 0
Hematite, Phos. .03-.05	11.71	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.67	5 7 6	$10.33	2 2 6
Wire rods, No. 5 gage	31.11	8 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$30.20	8 5 0	$28.55	5 17 6
Merchant bars	1.14c	7 0 0	.48c to .50c	2 4 0 to 2 5 0
Structural shapes	1.26c	7 15 0	.48c to .50c	2 4 0 to 2 5 0
Plates, †¼ in. or 5 mm.	1.43c	8 15 0	.61c to .62c	2 15 0 to 2 16 0
Sheets, black, 24 gage or 0.5 mm.	1.43c	8 15 0	1.27c to 1.29c	5 15 0 to 5 17 6
Sheets, gal., 24 gage, corr.	1.51c	9 5 0	1.56c	7 2 6
Bands and strips	1.55c	9 10 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.38c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.79c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.79c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.93	0 16 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.71	2 18 6	$ 9.46	240(2)	$ 9.10	325	$16.42	69
Basic bessemer pig iron	10.25	2 16 0*	7.88	200(1)	8.26	295	17.97	75.50
Furnace coke	2.42	0 13 3	4.89	124	4.48	160	5.09	21.40
Billets	19.67	5 7 6	14.58	370	11.06	395	23.68	99.50
Standard rails	1.34c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.14c	7 0 0	.90c	500	.57c	440	1.24c	115
Structural shapes	1.43c	8 15 0	.99c	550	.57c	440	1.22c	112.50
Plates, †¼-in. or 5 mm.	1.47c	9 0 0	1.17c	650	.72c	555	1.43c	132.50
Sheets, black	1.43c	8 15 0‡	1.35c	750‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.55c	9 10 0	2.70c	1,500	1.95c	1,500	4.00c	370
Plain wire	1.38c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.55c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

1000 tons of sheets to Canada and an order from Russia for an additional 10,000 tons.

Belgian Pipemaker Holds Dividend Rate Steady

Brussels — The annual general meeting of Societe Metallurgique d'Aubrives et Villerupt brought out that the net profit for the year 1930-31 was 3,157,895 Belgian francs ($88,000), the same as for the preceding year. A dividend of 60 francs ($1.66) has been declared.

It was stated in the report that turnover decreased, owing to the general crisis, and shipments for export were reduced by about 50 per cent. On the other hand, necessity for installing new gas and water lines in various districts of Belgium contributed toward maintaining production for the domestic market.

The two blast furnaces had a smaller output than in previous years. In the pipe foundry operations were normal but in departments specializing in railroad material work was considerably reduced.

Britain Solving Trade Problems while Continent Faces Many Obstacles

THE outstanding event of the first quarter of 1932 is the spectacular re-establishment of the financial position in Great Britain. In September, 1931, when the pound sterling went off the gold standard, practically all classes of the British population accepted sacrifice by way of a substantial increase of the already heavy income tax, reduction of allowances, cuts in salaries among teachers and civil servants, extra taxes on certain commodities. At that time the budget was expected to show a deficit of £74,000,000 for the current financial year.

This momentous fiscal year has just ended, and Britain reaps the benefit of her splendid action by seeing the budget closed with a surplus of £364,000. Furthermore, the confidence of foreign nations in British financial stability has been retained to such an extent that efforts are actually being made to prevent the pound sterling from rising too rapidly, and meantime the sum of £80,000,000 credit granted by the United States and France in the summer of 1931 has been repaid before it became due. While it is realized that government economy continues an absolute necessity, there is no more anxiety with regard to the financial outlook of the country.

Confidence Is Renewed

Naturally, these remarkable results have brought back a certain amount of confidence and the general atmosphere in commerce and industry has improved, especially as hopes are founded that the additional taxation imposed last September will be removed, thus relieving trade. There is no doubt, however, that the extra burdens assumed in the past six months are still reacting on industrial and trade activities.

While certain sections have begun to improve, the basic industries, such as coal, iron, steel, shipbuilding, are still despondent. It is too early to visualize the effects of the tariff, as it only began to operate on March 1. In fact, imposition of this duty and, previously, of duties under the abnormal importations act caused foreign exporters, immediately before the tariff duties were applied, to rush considerable tonnages at the lowest prices acceptable; therefore, the returns of imports since November cannot be looked upon as giving an accurate picture of what will become the new normal position.

Problems and outlook of the steel industry in Europe are set forth in the accompanying quarterly review by Vincent Delport, London, European manager of STEEL, a composite of the observations of this publication's corps of market observers in Great Britain and the Continent.

Actually, imports of iron and steel into Great Britain during January and February were 422,692 tons, against 398,829 tons in the corresponding period of 1931, showing an increase of 6 per cent. During the same period, exports dropped slightly from 310,898 tons in 1931 to 307,086 tons in 1932. Thus, the depreciation of the pound has not much favored the British exporter, and the balance remains unfavorable.

It must be noted in this respect that export prices of Continental steel have reached an absurdly low figure, probably the lowest in history. From the point of view of steel production, there is a slight improvement, the output for January and February being 910,300 tons, compared with 888,600 tons in the corresponding period of last year.

While Great Britain, although not yet directly heading for prosperity, can look back upon some of her worst internal troubles, the Continent remains in the throes of depression. France does not seem able to balance her budget; her balance of trade is unfavorable, production is at a comparatively low ebb, and unemployment has become a serious problem. Germany lives under a spell of gloom. Much depends upon the reparations conference to be held in June at Lausanne.

Many Factors Are Adverse

At present, the outlook beyond the end of the Hoover moratorium year June 30 is uncertain. The general standard of living is low and works and manufactures are working at a reduced rate. The recent contracts for 300,000 tons of steel products to be delivered to Russia between now and June will afford some work to the mills, and a further 200,000 tons is expected; this, however, will not bring much relief to the financial situation of the producers in the immediate future.

Belgium and Luxemburg are severely handicapped in their export trade. The Italian iron and steel industry operate under difficulties. Conditions in Sweden are dull. It is, however, in Central and Eastern Europe that the position has reached the most critical stage. Austria and Hungary in particular are reported on the verge of bankruptcy and in view of the large sums due on loans from other countries, there is anxiety lest a critical turn of events should further weaken the general financial position.

Belgium Blocks Entente

In the midst of this confusion representatives of the iron and steel producing countries that are members of the European steel entente have been unable to re-establish this organization on the new basis which past experience has shown to be necessary. The failure is due to the lack of agreement among Belgian works. Meantime, the only effect of the entente as it exists is to maintain contact between the producers of Europe. The actual output of the member-countries is well below the authorized quota.

The combined steel output of Belgium, France, Germany, Luxemburg and the Saar for the first two months of the year was 2,813,000 metric tons, compared with 4,100,000 tons in the corresponding period of last year, a decrease of 31.5 per cent. It is interesting to note that France is now producing more than Germany. Nothing has been found to prevent steel prices from falling to a level that would have been thought impossible a year ago.

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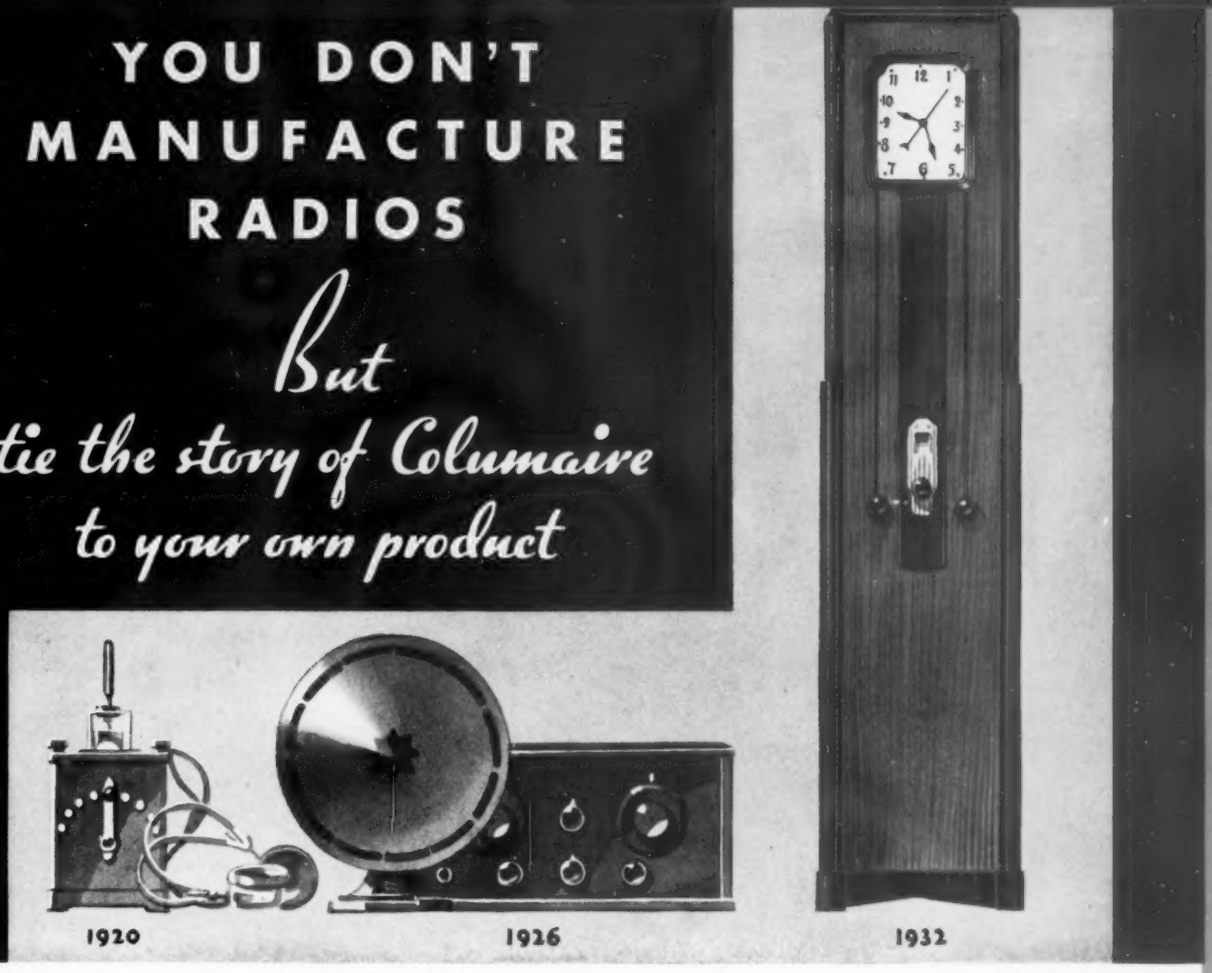

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(SEE OTHER SIDE FOR THE STORY OF COLUMAIRE)

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YOUNGSTOWN PRESSED STEEL COMPANY
Warren, Ohio

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	25	7
¼	62	50½	¼	30	13
⅜—3	64	52½	⅜—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+11	+46
¼	60	49½	½	25	9
⅜—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 38.40 to 42.40
Six to 24-inch, Chicago .... 34.40 to 38.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	2.35c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	1.90c
Los Ang., lcl	2.20c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	2.35c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	2.35c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.50c
N. Y.	3.00c
Portland	3.75c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.05c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.25c
San Fran.	3.95c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	4.35c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.75c
San Fran.	4.35c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.25c
San Fran.	3.75c
Seattle	3.25c
St. Paul	3.20c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.75c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.50c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b)Net base straightening, cutting, boxing 1 ton or more.

(c)Plus mill, size and quantity extras.

(d)Minus quant. diff.

(e)New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Machinery

AMTORG TRADING CORP. is again in the market with a list of tools and equipment for Russia. It is understood that credit terms are so extended as to be unfavorable to several builders approached. However, with the present stagnation of domestic markets even this business may find interested bidders. Recent bids on equipment for navy yards showed a wide disparity, probably attributable to the fact that builders are anxious to move items in stock. Resale offerings are numerous in the Chicago territory, with prices decidedly unsettled. Action continues to be deferred on pending inquiries in the Pittsburgh district.

New York—Equipment and machinery demand continues sluggish, inquiry and orders both being slow. Amtorg Trading Corp. is in the market for tools for Russia for the first time in several months, with a list of lathes and other tools, but is understood to be offering credit terms unsatisfactory to several machine builders approached.

A New England grinding machinery interest is reported to have taken some business for this Russian account. It now develops that some of the recent volume placed by the government and a Detroit automobile interest was supplied partially from stock, which may account for wide disparity in prices quoted, some successful bidders evidently being anxious to move tools in stock. A middle-west builder of shapers is reported to have taken 24 shapers for a Detroit interest some weeks ago, but also supplied the order largely from stock.

Recent bids on machinery for various navy yards, east and west, showed a wide range, a few of the bids being far below the average.

Worcester, Mass.—No decision has been reached on 12 lathes for which the government opened bids a week ago. They probably will be placed within another week.

Arter Grinder Co. placed a $5000 machine this week with a manufacturer of vacuum cleaners in Connecticut. Other inquiry is negligible. So far no demand has come from Detroit for machines expected to be required in automobile production.

Pittsburgh—Machine tool users are taking only a passive interest in new purchases. A number of inquiries have been pending for 6 months to a year but no early action is contemplated on such business. Inquiry for other types of plant equipment, although spotty, is tending upward although sales are slow to follow a similar course. Railroads are out of the equipment market for anything but immediately necessary purchases while none of the steel companies is prepared to start an improvement campaign on any large scale.

Cleveland—Equipment sales hold at low level, and beyond scattered orders for single machines from some small shops, nothing of importance is in prospect. Most plants that are operating are making old equipment serve the purpose as long as it can be made to function, avoiding any capital expenditure for new units. Cleveland Graphite Bronze Co. is operating on full schedule and making occasional purchases. Sales to automotive interests are slack. One report is that Ford men who were formerly responsible for specifying new equipment now are devoting all their time to the solution of production problems.

Chicago—Resale offerings of plant equipment are numerous. Equipment at public sales goes at low figures, no evidence existing of a sustained bidding market. Production equipment and machine tools of $200,000 inventory value were sold at the plant of the Fuller & Johnson Mfg. Co., Madison, Wis., engine and motor manufacturer, on April 28. About 35 surplus production and machine tools were auctioned April 27 at the plant of Quaker Mfg. Co., Chicago Heights, Ill.

Leading machine tool dealers have had no business this month except small tools. A farm implement plant may buy three 5-foot radial drills. Some prospects are noted of a revival of the inquiry for toolroom equipment for the Lane Technical high school, following improvement in Chicago board of education finances. Original plans included equipping seven machine shops for that school. The board of education is inquiring for small drills, floor grinders and a squaring shear for the Lindblom and Hubbard junior high schools.

Hires Only Family Heads

Birmingham, Ala.—Only men with families were taken on when the Tennessee Coal, Iron & Railroad Co. called back over 1000 men for partial resumption of two blast furnaces, the rail mill, and five open-hearth furnaces.

G. E. Sales Are Off

General Electric Co., Schenectady, N. Y., reports bookings in the first quarter at $33,404,642, against $60,366,297 a year ago. Billings in the first quarter were $37,876,399, compared with $61,959,800 a year ago. Available for common dividends for the first quarter was $4,508,667; a year ago, $10,844,334.

Alton Rehires Track Men

Chicago—Chicago & Alton railroad is putting 300 more men to work on track maintenance. This force has been idle during the winter months.

Exports of Metalworking Machinery

	March		Three Months Ending March	
	1932	1931	1932	1931
Engine lathes	7	63	37	153
Turret lathes	9	35	19	75
Other lathes	20	61	53	177
Vertical boring mills and chucking machines	3	33	17	63
Thread-cutting and automatic screw machines	14	24	30	59
Knee and column type milling machines	6	22	13	34
Other milling machines	14	41	38	80
Gear-cutting machines	4	36	23	61
Vertical drilling machines	6	64	19	107
Radial drilling machines	...	9	1	26
Other drilling machines	28	62	59	661
Planers and shapers	9	42	39	92
Surface grinding machines	5	12	31	33
External cylindrical grinding machines	11	42	37	75
Internal grinding machines	2	25	24	105
Tool grinding, cutter grinding, and universal grinding machines	35	93	99	253
Pneumatic portable tools	610	1,218	1,418	2,853
Chucks for machine tools	445	1,226	1,528	2,650

Steel Plate Construction

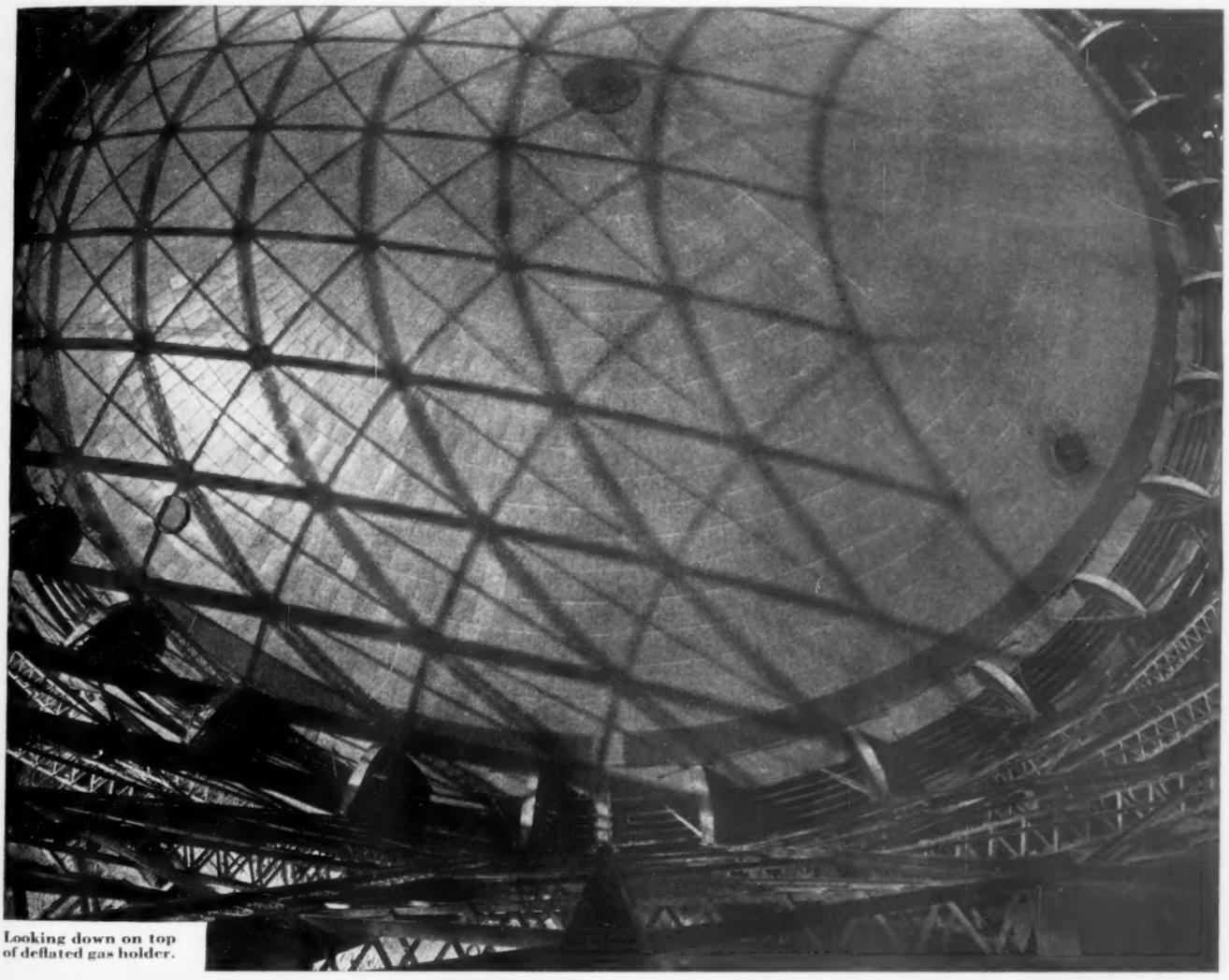
THE results of long experience in the fabrication and erection of all kinds of steel-plate work are readily apparent in the close adherence to specifications and the all-around excellence of McClintic-Marshall Steel Plate Construction. Avail yourself of the exceptional qualifications and unmatched facilities of this organization! You will discover, as so many prominent users of steel-plate work have discovered, that McClintic - Marshall's specialized knowledge and broad experience assure complete satisfaction.

Products: McClintic-Marshall fabricates steel plate work of every description, including: Low-Pressure and High-Pressure Gas Holders, Elevated Water Tanks, Standpipes, Penstocks, Stacks, Oil Tanks, Barges, Creosoting Cylinders, Hydraulic Accumulators, Agitators, Condensers, Digesters, Hoppers, Cement Kilns, Bins, Chutes, Evaporating Pans, Ladles, Manifolds, Distillation Plant Equipment, Gasoline Absorption and Stabilization Plant Equipment.

McCLINTIC-MARSHALL CORP.
Subsidiary of Bethlehem Steel Corporation
General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis, San Francisco, Los Angeles.

Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York



Looking down on top of deflated gas holder.

McClintic-Marshall

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

ALBANY—Albany Machine & Tool Works has been incorporated with 500 shares common stock, by B. H. Mills, Albany.

BUFFALO — Industrial Combustion Corp. has been incorporated with $2000 capital to manufacture furnaces, by Franchot & Warrent, Buffalo.

New Jersey

ATLANTIC CITY—Acorn Iron Co. has been incorporated with 2000 shares common stock to manufacture metal products, by Herman J. Finn, Atlantic City.

NEWARK—Ironbound Junk Co. Inc. has been incorporated with $50,000 capital to deal in and prepare scrap metals, by Ernest Scuorzo, 164 Market street, Newark.

TRENTON — Keystone Structural Steel Co. has been incorporated with $200,000 preferred stock and 5000 shares common, to fabricate steel products, by Frank Transue, Trenton.

Ohio

CLEVELAND—Cleveland Heater Co., Locust avenue and West 116th street, will build additions, one 100 x 140 feet; other 100 x 200 feet, each one and two stories. George S. Rider Co. is designer.

Michigan

DETROIT—Detroit Gray Iron Foundry Co., 6403 Wight street, has had plans made by Mildner & Eisen, Hammond building, architects, for a 1-story addition to its foundry.

DETROIT — Consolidated Stamping Co., 2755 West Fort street, has been incorporated with 10,000 shares no par value to manufacture stampings and metal products, by Abraham Vizvary, 79 Eason avenue, Highland Park, Mich.

Illinois

CHICAGO—Du-Al Shavemaster Corp., 3213 Wentworth avenue, has been incorporated with $20,000 capital to manufacture safety razor blade sharpeners, by George H. Frank and associates.

CHICAGO—Commercial Coil & Refrigeration Co., 455 Artesian avenue, has been incorporated with $4000 capital to manufacture ice-making machines, by F. William and Richard Gauger.

Southern States

WASHINGTON—Bids will be received until May 3 by the bureau of supplies and accounts, navy department, as follows: Schedule 7881, 50 automatic air compressors with tanks, for delivery at Brooklyn, N. Y.; Schedule 7887, one motor-driven vertical turret lathe for delivery at Boston; Schedule 7917, one water-seal type oxygen gas holder for delivery at Norfolk, Va.

ATHENS, TENN. — Athens Stove Works will build a 1-story addition, 125 x 200 feet, to its plant and foundry, to cost $40,000.

Oklahoma

TULSA—Howe Packer Co. has been incorporated with $5,000 capital to manufacture oil well packers, by D. E. Sigmon, 614 East Fourth street.

TULSA—Fred E. Cooper, distributor for tractor division of Allis-Chalmers Mfg. Co., Milwaukee, has added a machine shop for tractor repair at 211 South Lansing street.

TULSA, OKLA.—CO_2 Appliance Co., has been incorporated with $100,000 capital to manufacture machinery for producing carbon dioxide for bottling works, by R. D. Teasley, 1341 East Thirty-sixth street.

Texas

SAN ANTONIO—Petroleum Machine & Foundry Co. has been incorporated with $19,500 capital to operate a foundry and machine shop, specializing in oil field equipment, by Claude Ussery, 1535 Schley avenue, president and manager.

Wisconsin

CAMPBELLSPORT—Bond issue of $60,000 has been authorized for municipal waterworks and sewage plant. Plans by Jerry Donahue Engineering Co., Sheboygan, Wis.

EAU CLAIRE — National Pressure Cooker Co., 1515 Ball street, is building a 1-story addition 50 x 100 feet.

MILWAUKEE—Monarch Tool & Die Co., recently organized, is establishing a machine shop at 815 West Juneau avenue.

MILWAUKEE—Newport Mfg. Co., Carrollville, Wis., a suburb, a DuPont subsidiary, is having plans made for extensive changes in equipment in its dyestuffs plant. Dr. Ivan Gubelman is in charge.

PLYMOUTH—General contract for high school to cost $250,000 let to Bentley Bros. Inc., 1838 West Pierce street, Milwaukee. H. W. Tullgren is architect, 1234 North Prospect avenue, Milwaukee, is in charge.

WASHBURN—City council has authorized purchase of waterworks plant and improvements to cost $25,000 to $35,000 will be installed. Nora Montbriand is city clerk.

Dominion of Canada

HAMILTON, ONT.—W. G. Shelton Co., 1700 Locust street, St. Louis, Mo., will establish a plant here to manufacture electrical appliances.

NIAGARA FALLS, ONT.—Canadian Carborundum Co. Ltd., Falls View, will award contract soon for an addition to its plant. L. J. Call, Niagara Falls, N. Y., is engineer.

POINTE CLAIRE, QUE.—Canadian Gas & Equipment Co. Ltd., 4800 Seventh avenue, Rosemount, plans erection of a manufacturing plant here.

NORTH BATTLEFORD, SASK.—P. Hewett, acting city clerk, will receive bids until April 30 for a centrifugal pump and motor, extension shaft and pulley for use with auxiliary gas engine; 350 gallons per minute against 350 feet dynamic head, 60 cycle, 2200 volts.

New Trade Publications

WELDING—Application sheet No. 28, series 2, by the Lincoln Electric Co., Cleveland, is devoted to the application of bosses to levers. It is illustrated.

BUSHINGS—Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, has issued Catalog B-232, describing its drill jig bushings, with data tables.

REFRACTORIES—E. J. Lavino & Co., Bullitt building, Philadelphia, in Bulletin 1-13-17, shows its improved chrome brick in all standard 9-inch sizes, with dimensions and other data of use to the consumer of this material.

TILT TRUCKS—Tidy Products Inc., Chrysler building, New York, has issued a bulletin on its tilt trucks for handling fluids in barrels and drums. Illustrations show its use in transporting and storing.

WELDING WIRE—Williams & Co. Inc., 1748 East Twenty-second street, Cleveland, in a current bulletin presents its line of welding wire for gas and electric welding and its line of welding accessories and supplies.

DRILLS—Cleveland Twist Drill Co., 1242 East Forty-ninth street, has issued a catalog sheet and a circular on four new drill sets recently placed on the market for various applications. They are illustrated.

WIRE ROPE—John A. Roebling's Sons Co., Trenton, N. J., in the current issue of *Wire Engineering*, its own publication, provides a study in stresses in shaft hoist ropes, with engineering data and a series of charts by which to determine the factor of safety remaining in used and worn wire ropes.